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ABSTRACT

This document consists of the eleven issues of the "Journal of Postsecondary Education and Disability" issued from 1987 through 1990. Ostensibly a quarterly, the jouranl had only two numbers in 1987, three in 1989, and two in 1990. Some feature articles during this period have the following titles and authors: "Perception of Tutoring Services by Mainstreamed Hearing-Impaired College Students" (Michael S. Stinson); "Characteristics of Students with Learning Disabilities Who Take the ACT Assessment under Special Conditions" (Merine Farmer and Joan Laing); "Faculty Inservice Training: Impact on the Postsecondary Climate for Learning Disabled Students" (Mary Morris et al.); "Learning Disability College Programming: A Bibliography" (Stan F. Shaw and Sarah R. Shaw); "The Other Minority: Disabled Student Backgrounds and Attitudes toward their University and Its Services" (Alrich M. Patterson et al.); "Using computers to Present 'Woodcock-Johnson Psycho-Educational Battery' Results to Postsecondary Students with Learning Disabilities" (William N. Margolis); "Effective Counseling Techniques for LD Adolescents and Adults in Secondary and Postsecondary Settings" (Lynda Price); "Establishing Dialogue: An English Professor and a DSS Coordinator Discuss Academic Adjustments--Part 2" (George Vincent Goodin and Sam Goodin); "Disabled but Able To Work: Federal Initiatives in Training Young People with Disabilities in Employment" (Dale Brown); "Career Decision-Making Attitudes of College Students with Learning Disabilities" (Ernest F. Biller); "A Five-Year Analysis of Disabled Student Services in Higher Education) (Marie T. Sergent et al.); "Methods of Adapting Computers for Use by Disabled Students" (Betty A. S. Keddy); "Disability Simulation Using a Wheelchair Exercise" (David Pfeiffer); "Sex Group Membership as a Confounding Factor in Handicapped Students' GRE General Test Performance" (Randy Elliot Bennett et al.); "Factors Influencing the Academic and Social Integration of Hearing Impaired College Students" (Susan Foster and Paula Brown); "A Survey of Faculty Attitudes and Accommodations for Students with Disabilities" (Yona Leyser); "Assessing Library Accessibility: Suggested Guidelines" (John W. King); "The Effect of Word Processing on a Dyslexic Artist's Composition" (Loretta Cobb and Wilma Mims). References accompany most articles. (DB)

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Journal of
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Volume 5, Number 1 Winter, 1987

Journal of Postsecondary Education and Disability

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The *Journal* seeks manuscripts relevant to the field of postsecondary accommodations to disabled students, including theory, practice, and innovative research. For manuscript instructions, see "Guidelines for Authors." The *Journal* welcomes essays, letters, and contributions about resources, local and national events, etc. Send material to Kay Lesh, Editor, Disabled Student Services, Cherry and Second Street, University of Arizona, Tucson, AZ 85721; (602)621-5183.

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from the editor

You are reading an exciting first venture. The *AHSSPPE Bulletin* has become the *Journal of Postsecondary Education and Disability.* The change reflects the growth and development of the field of postsecondary education and disability and will give us, as practitioners, a vehicle for exchange of information that is both theoretical and practical. Readers are urged to participate in the *Journal's* expansion by contributing to upcoming editions. The following areas actively solicit reader contributions.

Feature Articles. The *Journal* welcomes manuscripts relevant to the field of postsecondary education and disability. Research and theory-based articles are especially sought. Guidelines for authors are found elsewhere in this issue. Because ours is a relatively new field, we have a unique opportunity to make an impact by researching *and* writing about the various aspects.

Practical Applications from the Field. Information and descriptions of innovative and practical programs in the postsecondary field can be shared with professionals on other campuses. We encourage submission of manuscripts of direct practical value to those in the field.

Book Reviews. The *Journal of Postsecondary Education and Disability* will continue to use the expertise of readers to review new publications. If you have read a new book you found helpful and relevant (or a waste of time!), others will want to know about it. Additionally, publishers send the *Journal* review copies of new books occasionally. These titles will be listed periodically to allow readers the chance to volunteer to review a particular book.

Research in Progress. We would like to be able to keep readers informed of relevant research being conducted. If you have a research project in process, you are urged to submit a brief description for publication.

Comments, Opinions, and Issues. The old "Speak Out" column will be retained to give a forum for reader comment on issues facing the field, guest editorials, and opinions. Your input will be welcome, as always.

It is hoped that these areas will allow readers to participate in a variety of ways, from scholarly articles to brief statements of opinion. You are encouraged to join us in making this new *Journal* a publication that meets the needs of those of us working in the field of postsecondary education and disability.

Kay Lesh, Editor

president's message

The Executive Council Meeting in Washington this past November was very productive. With 2½ days of agenda items, many issues were discussed and important decisions were made.

The Conference Planning Committee met to discuss progress toward the '87 conference. Plans are well underway to make our 10th Annual Conference a time to remember. The conference theme, "Capitalizing on the Future," will have special meaning to AHSSPPE members who take part in the legislative focus of the conference. Those of you who cannot attend will not be forgotten. We have something special planned for you!

While in Washington, Catherine Johns, legislative chair, and I met with 14 people who will become important contacts for our Association. You will hear more about these meetings from Catherine.

The Long Range Planning Committee's final report was discussed in great length. Executive Council members studied each issue and concern raised in the report and prioritized them. AHSSPPE's mission statement was revised. The following, more refined statement is:

> The mission of the Association is to provide unique leadership, focus, and expertise for professionals who promote equal opportunity and access to postsecondary education for students with disabilities. This mission is supported by the Association's committment to:
>
> - Advocacy
> - Communications
> - Networking
> - Professional Development
> - Training
> - Research

Bill Garrison served as our facilitator through the strategic planning process.

Among the actions taken at this meeting, the Executive Council approved the recommendation of the Publications Committee to develop the *Bulletin* into a professional journal. The *Bulletin* will be renamed the *Journal of Postsecondary Education and Disability* to reflect the field rather than association news. The format will be more professional, focusing on academic and scholarly articles as well as practical information from service providers in the field. Information pertaining to the association, announcements, and other news will be published in the *Alert*. This will be the last president's message to be published in the new *Journal*. From now on, the president's message will be included in the *Alert*. You are reading the first of many more informative *Journal* editions to come!

You may have noticed something else new on the cover. AHSSPPE has a new logo! The Executive Council voted to change the logo to a more simplified, cleaner look.

As we move toward our 10th year, we see our organization growing and becoming more professional. (Our membership has surpassed 800!) Your Executive Council and I will continue to work with you to achieve national visibility for our unique association. Your ongoing input is vital to our success.

Pat Pierce
President

Word Processing in a Classroom With Handicapped Students

Linda Maik, *University of Wisconsin–La Crosse*

This article compares the reactions to word processing by two freshman composition classes at the University of Wisconsin–La Crosse to determine if self-assessment of writing skills and attitudes differs between classes. One class (R) was composed of 92% academically vulnerable students who had taken a remedial course; the other (M) was a mix of students of varying abilities. Initial reactions, self assessment of improvement in three steps of the writing process (prewriting, writing, and revising), and attitudinal changes were surveyed. The study shows that R students adapted more quickly to word processing than M students and that a larger percentage of R students thought that word processing improved their composition skills. Both R and M students showed attitudinal changes towards composition from negative to positive.

INTRODUCTION

"Get a computer for writing," advises Harry Friedman (1986), a biomedical engineer who happens to be learning disabled. His wife, he says, will never have to check spelling again.

Computers can revolutionize the world for people with disabilities, as "Technology and Handicapped People" from the Office of Technology Assessment (1982) proclaims. I can attest that word processing has revolutionized the world of writing for the great majority of my students, whether they be clinically diagnosed as learning disabled, physically handicapped, or simply poorly prepared by their secondary education. Because I deal with many academically vulnerable students in my teaching of English at the University of Wisconsin–La Crosse and because I have become an ardent devotee of word processing for my own writing, high-risk students and word processors have converged in my composition classes.

In 1986 I taught three sections of computer-assisted basic freshman composition: one that was the usual random mix of students of various skills and preparations; another in which 63% of students had been identified as being weak in English skills and so had completed a short remediation course; and a third in which 92% of the students were identifiably weak and had completed the remediation course.

Students who took the remediation class, which was a five-week brushup of grammar and its application in sentence writing, were primarily those who had scored in the 13th percentile or lower in the English section of the ACT. Reasons for low scores varied: weak or nonexistent English background, clinically diagnosed learning disabilities, physical disabilities that interfered with motor skills, and other undiagnosed learning problems.

Students scoring below the minimum ACT percentage, however, were not forced to take the remedial class. The fact that it was not required, that it had no more than 15 students in a section, and that it was only 5 weeks long contributed to favorable student reaction. The class did not emphasize the nuts and bolts of writing such as sentence structure and punctuation; students were freer to concentrate on the more sophisticated aspects of writing such as invention, organization, adaptation to audience—and word processing.

Since a large number of disabled students have enrolled in my composition classes during the past 5 years, I have tried to implement techniques to make learning easier for them. Not surprisingly, these supposed concessions for disabled students have benefitted all my students, and I am convinced that I am a better teacher because of them. Wherever possible, I combine verbal, written, demonstrative, and hands-on classroom experiences. I print my numerous handouts on different colored paper so that students know pink is for computers, yellow is for information they might want to keep forever, and white is for everyday assignments that can be discarded after the next test. To prevent paper sprawl, I have the handouts punched so that they can be inserted into a three-ring binder. The ways that I had found word processing to be helpful in my own writing were ways that I thought would be particularly advantageous to students for whom writing was difficult. Word processing combines legible first drafts that clearly reveal errors ranging from spelling to organizational weakness with ease of revision that encourages improvement while retaining legibility.

At the end of the semester I surveyed student reactions to word processing. What, I asked, had been their previous experiences with computers, and how did they fare with word processing in this class? Did they think that it had improved their writing, and if so, at what stages of the writing process had it been helpful? Finally, had word processing changed their attitude toward writing? I was particularly curious to see if there would be any difference in perception and reaction between the randomly mixed class and the class made up chiefly of the remediation students. The bottom-line question was this: Were students who had been identified as having low skills in English helped by computer-assisted instruction?

USING WORD PROCESSING IN COMPOSITION

When I decided to add word processing to my composition classes, I knew that I would have to spend some of my valuable class time in computer instruction, and I was particularly concerned about the disabled students who might require additional explanations or practice. Still, I did not want the computer to take over my composition class. I wanted the students to be able to adapt the technological advantages of word processing to their own human processing of words (composition itself), but the writing was to remain paramount. My goal was to tell the students only as much as they absolutely had to know about word processing. Consequently, like many of my colleagues (Rodrigues, 1985), I found myself steering between the Scylla of teaching a computer course and the Charybdis of giving so little computer information that the students didn't know enough about it to use it. I felt that I more often veered toward Charybdis.

Because the composition course was advertised in the class schedule as "computer-assisted, typing preferred," I thought that many of my students would have actually faced a computer. My guess was too high. Nearly one-third (31%) of the class members who had taken the remedial course (Class R) had never met a computer face to screen. Nearly one-fifth (19%) of the members of the average college mix class (Class M) were unacquainted with computers. Having no experience with computers, however, did not stop the R students. They enrolled in higher numbers than the M group in a computer-assisted course.

My goal at the beginning of the semester was to make the students as comfortable as possible with the computers. The second day of class the students brought me individual floppy disks labeled with their names, and I brought in a mobile computer unit with a stretch cord keyboard. We turned it on and played around on it, establishing a class file composed by whichever students had the keyboard. By the next class period I had formatted their disks with PC-Write, a shareware program for IBM computers that Waddell (1985) has praised highly, and we met in the computer lab for some hands-on experience.

By the second semester that I used word processing, I had learned enough to hire a couple of former students to help calm the current crop of students as they met their word-processing program for the first time. I distributed a nine-page manual, which had been written collaboratively in a user-friendly tone by former students, and we worked together through a tutorial that introduced such basic techniques as establishing a file, simple revising, saving the file, and re-entering it. That was it. I then turned the students, nondisabled and disabled alike, out into the jungle of campus computer labs to survive as best they could.

A semester later I asked the students to recall their initial reaction to word processing. Was it frightening, enjoyable, or challenging? A total of 27% of Class R found it frightening, compared to 19% of Class M. The number of students who described their initial reaction to the word processor as frightening, regardless of which class they were in, correlated with the number of students who had no prior computer experience. The largest portion of Class R, 41%, compared to 33% of Class M, found the introduction enjoyable, with the remainder, 32% of Class R and 48% of Class M, finding it challenging. Of those students who had had experience, students from Class R were much quicker to enjoy the computer than students from Class M, who more cautiously termed their initial reaction as challenging.

I did my best not to lose sight of the computer during the semester. When I formatted the students' disks with PC-Write, I also craftily included a couple of exercises, one on paragraph revision and the other on basic sentence structure, to be assigned early in the semester so that the students could not avoid using the computer. Later in the semester I gave two or three 15-minute demonstrations with the mobile unit in the classroom, and I distributed two more handouts describing more sophisticated techniques, such as copying from disk to disk, that students could then implement.

How long did it take students to become confident about using the word processor? Again, the students in Class R surpassed those in Class M in the speed of their acceptance of the technology. After using the word processor for just one essay, 32% of Class R felt comfortable, compared to 19% of Class M. After two essays, however, the classes were just about even, 73% and 71% respectively. Four of the remaining six students in each class required three assignments to feel comfortable

STAGES OF THE WRITING PROCESS

I was especially interested in discovering at what stages of the writing process—prewriting, writing, revising and editing—the students perceived the computer as being the most helpful and in discerning any differences in the reactions of the two classes.

There was a difference in the perceptions of the two classes about the usefulness of the computer for the first stage, prewriting. To be honest, I did not do much to encourage use of the computer for prewriting. True, I told the classes that any techniques (brainstorming, listing, outlining, even freewriting) that could be done with pen or pencil could be done on the computer, and the neatness and ease of rearrangement in outlining, for example, made the computer preferable. I also encouraged the students to establish electronic journal files and to use them at the beginning of a composing session to rid their minds of any cumbersome emotional baggage, to ask themselves questions about the upcoming writing project, or just to warm up their fingers. But all in all, I did not do much to push prewriting on the computer.

Therefore, I was astounded to discover that 59% of Class R completely agreed that word processing had improved their prewriting skills and another 36% agreed somewhat; therefore, a total of 95% of Class R thought that word processing had improved their prewriting skills. In Class M, 35% completely agreed, 30% agreed somewhat (for a total of 65% positive reactions), 30% disagreed somewhat, and 5% disagreed. The difference between the totaled positive reactions of the two classes was 30 percentage points. Were the more positive reactions of Class R the result of a more favorable attitude toward writing, as ascertained by a later question? Were these students now more willing to write partly because they liked it better?

Another question surveyed use of word processing in the writing stage. Because composing on the computer is so efficient and legible, throughout the semester I encouraged the students to use the computer to compose rough drafts instead of using it as a glorified typewriter to recopy those drafts. Again, Class R responded more positively than Class M. In Class R, 91% (with 55% composing on the computer most of the time) used the computer for first drafts. In Class M, only 62% (24% usually) used the computer for first drafts.

A second question about the writing stage dealt with perception. Did the students believe that their writing skills had improved because of word processing? In Class R, 59% totally agreed that their writing skills had improved because of the computer, and an additional 36% agreed somewhat; only one person (5%) disagreed. In Class M, 33% totally agreed, 48% somewhat agreed, and 19% disagreed. In the writing area, therefore, a total of 95% of Class R, compared with 81% of Class M, thought that word processing had improved their writing skills.

Of all the stages in writing, nowhere is computer technology more adaptable to the writing process than in revising and editing. According to my survey, students in both Class R and Class M were in favor of using this technology—inserting, deleting, moving—in revising their writing. A total of 59% of Class R and 57% of Class M said that they always revised on the computer, with another 41% of Class R and 38% of Class M saying that they used the technology occasionally. Therefore, 100% of Class R and 95% of Class M used computer technology for revision. All aspects of the writing process were given highly positive ratings, but the ease of revision received the highest rating in all the classes.

MECHANICS OF THE WRITING PROCESS

I had thought that one of the chief advantages of word processing for more academically vulnerable students would be the ease with which they could see spelling, punctuation, and grammatical errors. They agreed, but not as wholeheartedly as I had expected; Class M, in fact, was more positive than Class R. Table 1 shows the statistical responses to the statement "Using the PC makes it easier for me to see my spelling, punctuation, and grammatical errors." Two students (9%) from Class R totally disagreed that the computer made the identification of their errors easier.

Because I was supposedly able to assume basic literacy from my students—they had either scored sufficiently high on the ACT or had taken the remedial course—I didn't use any software programs to reinforce grammar, punctuation, or syntax. Indeed, studies such as Kelly and Anandam (1982) suggest that such software programs do not improve the quality of writing. Perhaps the next time that I teach the course, I may use a style analysis that identifies such questionable practices as lengthy sentences or use of the passive voice. If I do so, I will caution students that they themselves, not the software, must decide

Table 1
Student Response to Statement Regarding Use of Computers and Writing Mechanics

	% of Class R	% of Class M
Agree	55	67
Somewhat Agree	36	33
Total Positive	91	100

what, if any, revisions should be made. Having an electronic thesaurus available would also provide an additional exciting and useful dimension.

The one piece of additional software that I did use was one that I thought would be a special boon to dyslexic students—the spelling checker. The first semester that I taught the course, however, I simply told my classes that a spelling checker was available; not surprisingly, only 8% of the students used it. The next semester I demonstrated the spelling checker with the mobile unit, and the total number using it increased to 37%. Although I am sure that many more of my students from Class R would have profited from it, the use in the two classes was virtually identical, 36% in Class R and 38% in Class M.

When I teach the course again, I am going to stress the efficacy of the spelling checker still more heavily. However, with the truly chronic poor speller, whose every other word is misspelled, the spelling checker saves little time. Many of the misspelled words are so elementary that they are not included in the spelling checker's electronic dictionary, and the more difficult ones that do appear are often not recognized by the student. Still, a handful of students who called themselves poor spellers adored the checker and would not have turned in a composition without first running it through this additional software.

Thus, in polling reactions to the various stages in the writing process, the survey showed that more of the students who had taken the remedial course thought that the computer had improved their prewriting and writing skills. The two classes used and appreciated the revising technology of the computer equally.

ATTITUDES OF STUDENTS TOWARD WORD PROCESSING

My last questions dealt with attitudes. Both Rodrigues (1985) and Harris (1985) have reported that the majority of their students showed more positive attitudes toward writing after using word processing. I wondered if my students, especially those in Class R, would agree.

I asked the classes to respond to this pair of statements: (1) "*Before* word processing, I approached writing: (a) with eagerness; (b) with apprehension; (c) as an assignment to be completed; (d) as drudgery"; and (2) "*After* word processing, I approached writing: (a) with eagerness; (b) with apprehension; (c) as an assignment to be completed; (d) as drudgery." The results are shown in Table 2.

Table 2
Attitudes Toward Using the Word Processor

Student Response	% Before Class R	% Before Class M	% After Class R	% After Class M
Eagerness	9	19	41	57
Apprehension	18	14	36	10
Assignment	59	62	23	33
Drudgery	14	5	0	0

Not surprisingly, more students from the remediation group originally approached writing as drudgery; gratifyingly, no one from either class regarded writing as drudgery when the course had ended. Also gratifying, from my viewpoint, was the decrease in the numbers of students who chose the lackadaisical "assignment to be completed"—a 36% drop in Class R and a 29% drop in Class M.

The most puzzling change in the before/after scores occurred in Class R's assessment of apprehension. Unlike Class M, which showed a slight decrease in this category, twice as many Class R students became apprehensive as a result of taking the class. One assumption that can be made is that the more these students, who had been identified as weak in English skills, found out about writing, the more clearly they recognized the complexity of this task.

As I had hoped, by the end of the semester many more students in each class approached writing with eagerness. Members of Class R, who not surprisingly had farther to go, showed an increase of 32 points while members of Class M showed a 38-point increase. The differences between the groups were not overwhelming. However, finding 41% of the students in Class R who had a history of weakness and failure in English now eager to write *was* gratifying.

The last question in the survey dealt with future use of PC-Write. The survey showed that 95% of Class R and 100% of Class M planned to use the program.

SUMMARY

The bottom-line question in my mind was whether it was possible for students who are at-risk in English to use a word processor with minimum instruction. The poll showed me that not only is word processing feasible, but that it revolutionizes writing for many of these students. Although being less well prepared in both English and computer expertise than their counterparts in the mixed class, the class filled with remediation students enjoyed the computers and felt comfortable with the technology more quickly and gave much more credit to the computer for improving their prewriting and writing skills. They were virtually identical to the mixed class in all aspects of revision. Their attitudes toward writing at the positive and negative extremes were similar to the mixed class, though their ratings of their feelings within these extremes differed. Both classes overwhelmingly planned to use their word-processing programs in the future.

Would I use word processing again with a class of identifiably weak students? My answer is that I wouldn't teach these students without it. As one of my students said, "Word processing is a mere wonder!"

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Needs Survey of Students with Disabilities in Postsecondary Education in the State of Washington

Kathy Olson Mannelly, *Pacific Lutheran University, Tacoma, WA*

It is no secret that higher education is beginning to feel the full impact of PL 94-142 and Section 504 of the 1973 Rehabilitation Act. One consequence after 10 years of free and accessible primary and secondary education is an increasing number of people with disabilities and handicaps attending our colleges and universities. Therefore, colleges and universities are among the first of society's institutions to experience the impact of this educational and social change.

This writing presents a collaborative model that descibes a needs assessment carried out in Washington state in May, 1985, and provides an overview of differences in the disabled student population in Washington state's postsecondary schools.

THE PROBLEM

Early in 1984 a group of community college students contacted the Washington State Governor's Committee on Employment of the Handicapped (GCEH). They approached the GCEH because of its advocacy role on behalf of persons with disabilities. The students expressed frustration with what was described as a "lack of consistency in services provided" within 4-year institutions. They discovered that transfer programs did not provide comprehensive educational choices because the range of services provided by the six state 4-year institutions was not consistent. It should be noted that Washington's colleges and universities provide some curricula that are unique to each institution. The community college students felt limited in choosing a 4-year institution that offered the curriculum of their choice and found themselves choosing only those schools that provided services for their particular disability.

THE ACTION

The GCEH determined that its subgroup appropriate to handle the issue was the Postsecondary Action Group (PAG). In April, 1984, the PAG reached agreement on a project that addressed the problem and began developing a proposal for the GCEH.

The result was a grass roots project undertaken by the PAG whereby students, coodinators of disabled student services in postsecondary schools, agency and school administrators, advocates, and interested others formed a group to investigate the possible solutions to the problem. Two distinct but related issues emerged.

1. There was a dearth of information concerning the needs of disabled students attending postsecondary institutions.
2. Comprehensive documentation outlining the services provided by each postsecondary institution was not available.

These issues led the group to make three assumptions.

1. The actual needs of disabled students attending postsecondary institutions were unknown.
2. There was a gap between student needs and services provided.
3. Legislative funding requests might be necessary so that each postsecondary institution could provide services consistent with student needs.

A literature search was undertaken to determine if comprehensive disabled student needs assessments had been published. Although it was rumored that instruments were already developed the search disclosed few published materials. The committee adapted material from a survey done in California in 1977 and developed an instrument for pilot testing during late summer, 1984.

The second survey targeted for services provided in postsecondary institutions was built from a reference work available through the Washington Association of Postsecondary Educators of the Disabled (WAPED).

Collaborative funding and other resources were sought by the GCEH to carry out the project. Major costs consisted of printing and mailing the surveys, entering data, compiling statistics, and interpreting the results. A research consultant was hired to supervise the project.

METHODS

Nine hundred eighty-seven (987) surveys were distributed to 47 postsecondary education institutions in Washington state during May, 1985. The total disabled college student population at that time was estimated to be 3700 students. The survey contained 27 questions with approximately 144 alternative answers.

To assure respondent anonymity, the surveys were sent to the coordinators of disabled student services in all public and private postsecondary educational institutions in Washington state. The coordinators distributed the surveys to a predetermined number of students per school and the students either mailed the completed survey directly to the GCEH using an envelope provided or sent it back to the coordinator, who mailed it to the GCEH.

To minimize the number of unanswered questionniares and to emphasize the importance of completing the study, the consultant contacted the coordinators of disabled student services in the surveyed institutions either by telephone or by personal visit. The assumption was made that the respondents completed their own questionnaires. In some cases all questions were not completed.

RESULTS

There were 987 survey questionnaires distributed and 432 surveys returned, a return rate of nearly 44%.(See Table 1). Of the total number of respondents, 241 were male and 205, female. The average age for males was 32; the average age for females was 31.

The data were divided by four basic computer sorts. Tabulations were based on the gender of the respondents, the individual's disability(s), the schools the respondents attended, and the major sources of financial support used by the respondents. In addition, a list of the subjective responses was compiled.

Age of Respondents

The average age of all respondents was 31.6 years. The range of average age in individual schools was 36 years (Clark College) to 19.8 years (University of Puget Sound). (See Table 2.) Age was also tabulated by disability. (See Table 3.)

Financial Support

The data suggest that students at community colleges and vocational-technical schools received the highest percentage of financial support from the Department of Vocational Rehabilitation (DVR). Disabled students attending colleges and universities said college financial aid was their largest source of financial support, with the second largest source of financial aid coming from the family. Supplementary Security Income and Workers Compensation were the second most frequently used sources of income for community college and vocational-technical students. (See Table 4.)

Dependents

Many of the students surveyed had one or more dependents. (See Table 5.)

Expected Length of Schooling

More than 80% of disabled students in vocational-technical schools planned to complete their education within 1 year. Of the other students, 80% planned at least 2 more years in school. It is interesting that 18% of the students in community colleges did not know how long they might be in their current school. (See Table 6.)

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Table 1
Survey Distribution and Response

Type of School	Number Distributed	Number Returned	Percentage Returned
Vocational-Technical	153	72	47
Community Colleges	529	207	39
Private Colleges and Universities	148	56	38
Public Colleges and Universities	157	97	62
Total	987	432	

Table 2
Analysis by Age and Selected Schools

	Average Age (yrs.)
*Bellevue Community College	24.5
Central Washington University	28.4
Clark College	36.0
Clover Park Vocational-Technical	35.5
Everett Community College	32.1
Seattle Pacific University	31.7
*University of Puget Sound	19.8
University of Washington	27.8
Highline Community College	29.8
Bates Vocational-Technical	33.4
*Pacific Lutheran University	24.7

*Generally known for students with higher income.

Table 3
Analysis by Age and Selected Disability

Disability	Average Age (yrs.)
Blindness	32.7
Deafness	26.8
Spinal cord injury	31.4
Orthopedic impairments	35.2
Systemic impairments	36.2
Multiple sclerosis	34.8
Cerebral palsy	27.3
Head injury	31.8
Diagnosed learning disorder	26.5

Table 4

Financial Source of Support by Type of Postsecondary School

	Type of School			
Source of Support	**Community Colleges**	**Vocational/ Technical Schools**	**Private Colleges and Universities**	**Public Colleges and Universities**
Veterans Administration	5.1	7.4	2.1	7.5
Supplemental Security Income	13.8	3.2	2.8	6.3
S.S. Disability Insurance	7.3	6.4	3.6	6.9
Workers Compensation	9.5	19.1	0	.6
Services for the blind	4.0	0	2.1	2.5
Division of Vocational Rehabilitation	19.2	35.1	15.6	11.9
Division of Developmental Disabilities	1.3	0	.7	.6
Public assistance or welfare	5.4	5.3	1.4	6.9
Private insurance	1.1	0	1.4	.6
Paid employment	2.2	1.1	5.0	11.2
Scholarship	1.9	2.1	9.9	4.4
College financial aid	12.7	9.6	19.9	18.7
Family	10.3	4.3	19.9	13.1
Other	6.2	6.4	15.6	8.8
Total	100%	100%	100%	100%

Table 5
Disabled Students and Number of Dependents

Type of School	Number of Dependents 0	1	2	3	4	5	6 or more
Community Colleges	19.2%	43.3%	16.3%	9.8%	9.4%	1.5%	.5%
Vocational/Technical Schools	9.7	30.5	27.8	13.9	8.3	4.2	5.6
Private Colleges and Universities	27.3	36.4	18.2	5.4	7.3	5.4	-
Public Colleges and Universities	16.8	62.1	8.4	6.3	3.2	3.2	-

Table 6
The Number of Years Disabled Students Plan to Finish Current School

Type of School	Expected Number of Years 0	1	2	3	4	5	6	Unknown
Community Colleges	25.1%	31.7%	13.6%	5.0%	1.0%	1.0%	4.5%	18.1%
Vocational/Technical Schools	47.8	42.0	10.2					
Private Colleges and Universities	20	34	30	14	2			
Public Colleges and Universities	17.1	34.1	27.3	13.6	2.3	2.3	3.4	

IMPLICATIONS

This overview of the data describes some disabled students who attended post-secondary schools in May, 1985. It is interesting to note that the mean age of the respondents is close to the mean age of the general student population at the University of Washington, the largest 4-year institution in the state, and that the largest and smallest age deviations occurred in private schools.

It appears that students in schools in areas generally known for their higher levels of economic income have the lowest average age and that students in schools offering more advanced degrees have a lower average age.

Financial aids statistics during 1985 indicate that employment, family support, and college financial aid are major sources for funding a college education by the general student population. In this respect, the data suggest that the population of disabled students is similar to the general student population.

The large percentage (60%) of disabled students who attend vocational-technical schools and who report more than two dependents deserves more research. The percentage of respondents attending private schools with two or more dependents appears to be smaller. We might conclude that the higher cost of private schools means those with more dependents cannot afford to attend those schools, which may be better able to provide individualized attention.

Those attending community colleges seemed to be uncertain about the direction of their education. It would be interesting to know if this is due to their physical condition, lack of setting educational goals during their secondary years, "ceilings" placed on enrollments in some of the 4-year state schools, or economic factors. This is another area where more research is needed.

The main value of this study was to provide data that planners, researchers, and administrators may find useful for consideration or comparison in the development and implementation of services for handicapped/disabled persons attending institutions of higher education.

Anyone wishing a copy of the data may contact Molly Phillips, Governor's Committee on Employment of the Handicapped, Employment Security Building, Olympia, WA 98504.

Perceptions of Tutoring Services by Mainstreamed Hearing-Impaired College Students

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ABSTRACT

A questionnaire concerning perceptions of tutoring services was administered to 52 hearing-impaired college students who were mainstreamed into classes with normally hearing students. Analyses of students' responses indicated that the following perceptions were associated with use of tutoring services: (a) students tended to seek help from a tutor when they were having difficulty with a class; (b) they continued to recognize their own responsibilities for ensuring success in class; (c) they felt a particularly important reason for seeking help from the tutor was to obtain additional information about what was happening in classes; (d) they had highly favorable attitudes towards tutoring.

As more programs at the secondary and postsecondary levels have hearing-impaired students mainstreamed into classes with normally hearing peers, there has been a corresponding increase in support services provided for them (Quigley & Kretschmer, 1982; Witter-Merithew & Dirst, 1982). These services include interpreting, tutoring, and notetaking (Bishop, 1979).

This article focuses on one of these services, tutoring. At the National Technical Institute for the Deaf (NTID), tutoring is provided to hearing-impaired students who enroll in regular classes at the Rochester Institute of Technology (RIT). Some tutors are professional specialists who usually have faculty rank and credentials in the subject area they tutor; other tutors are RIT students. Both the professional and student paraprofessional tutors receive formal training in tutoring (Wilson, 1982). Students can be tutored by professionals, paraprofessionals, or a combination of the two. The functions of tutors include (a) explaining information presented in class and in textbooks, (b) providing help with assignments, (c) assisting with preparation for exams, and (d) providing in-depth remedial review (Osguthorpe, 1980).

To date, virtually all writing about support services for hearing-impaired students has focused on the mechanics of providing these services (e.g., how to take notes for hearing-impaired students) and on the administration of them (Bishop, 1979; Osguthorpe, 1980). There has been little research on how students benefit from support services, including their subjective reactions to them.

The present study addressed five questions about mainstreamed hearing-impaired college students' perceptions of tutoring.

1. Is the use of tutoring related to students' desired grades in courses? Students were asked about (a) the grades they hoped to achieve and (b) the lowest grade that was acceptable. Desired grades may relate to use of tutoring. Students may, for example, be unwilling to earn anything less than a C in a particular course. When earning that grade appears to be in doubt, they may become motivated to seek help from a tutor.
2. Do students believe that when they receive help from a tutor, responsibility for learning shifts from themselves to the tutor? When tutoring is provided, it may foster the perception that the tutor is responsible for ensuring that the student learns; consequently, students may perceive their own efforts to study as relatively unimportant in determining course performance. It is important for providers of support services to know whether such negative side effects occur so that preventive measures can be taken, if necessary.
3. Are students likely to seek tutoring for more important classes than for less important ones? When students consider a course important, they may want a good grade and be more likely to engage in activities such as tutoring that can boost achievement.
4. What do students consider the most important reasons for seeking help from a tutor? The reasons students report as being most important may well represent critical areas of need. For example, if students say that an important reason to seek tutoring is to understand the course better, this would point to a need to receive help with understanding the course. In addition, the findings about reasons for seeking help may be valuable in efforts to increase appropriate use of tutoring services. Hurwitz, Hedberg, and Slusher (1978) have suggested that students who use support services are generally average or above-average students. If this is true, it would be desirable to increase use of tutors by below-average students. The information on reasons for seeking help could be incorporated into publicity, advising, and other actions designed to increase use.
5. What overall opinions do students have about the tutoring program? In establishing tutoring services we have assumed that these services provide significant help to mainstreamed hearing-impaired students. How viable an assumption is this? Data on students' opinions about the service provide an empirical check of this assumption.

METHOD

Subjects

Fifty-two NTID students who had each taken a minimum of five mainstreamed courses at RIT agreed to answer a questionnaire and received a $5.00 stipend. The severity of these students' hearing loss, as measured by the average of pure-tone thresholds for the better ear, ranged from 56 to 108 dB, with a mean of 90.00 dB. Their mean grade-level score on the reading comprehension section of the California Achievement Test was 11.0 (range 8.3 to 12.0).

QUESTIONNAIRE

The questionnaire was developed specifically for this study. Ideas for items came from suggestions of supervisors of tutor/notetakers, from a previous evaluation of tutor/notetaker services (Hurwitz et al., 1978), and from theory on student motivation (Ames & Lau, 1983). The final questionnaire was produced after two rounds of pilot testing.

This questionnaire consisted of three parts. The first two parts were designed so that students could compare thoughts about the tutor in a course in which they *received* tutoring with thoughts about the tutor in a course in which they *did not receive* tutoring. In the first part of the questionnaire, students were asked to identify the mainstreamed course in which they had used tutoring the most during the current or previous academic quarter; they then responded to the following three sets of questions about tutoring in that course.

1. *Desired grades.* Students read three statements such as "The grade I want to get in this course" and then indicated the grade on an A–F continuum.
2. *Responsibility for learning: Need to study.* Students rated six statements about the importance of studying and using a tutor in obtaining a good grade (e.g., "I need to study hard").
3. *Importance of course.* They rated four items about importance of the course (e.g., "Learning a lot from this course will help me in school.").

At the beginning of the second part of the questionnaire, students were asked to identify a course in which they had been mainstreamed, but in which they had not used the available tutor. They then responded again to the same questions asked in the first part of the questionnaire; in this case, however, the headings above the questions pertained to the tutor who had not been used.

In contrast to the questions in the first two parts of the questionnaire, which asked about the tutor in particular courses, the questions in the third part asked about tutoring in general (i.e., for all courses). These questions asked about the following.

4. *Reasons for seeking help from a tutor.* Students rated 11 statements regarding specific reasons for seeking assistance from a tutor (e.g., "I need to understand the course better").
5. *Opinions about tutors.* Students indicated their agreement with 22 items that were of three types: (a) students' overall opinion of the tutoring program (e.g., "Tutors are a big help to deaf students"); (b) perceptions of the kinds of students who use tutors; and (c) situations in which tutoring is or is not important.

RESULTS

Desired Grades

The ratings of grades that students "hoped to receive" and of those that "they would be satisfied with" were compared for the courses in which tutoring was and was not used. Table 1 presents mean ratings of these grade standards. A repeated-measures analysis of variance showed that "hoped for" and "lowest satisfactory" grades were significantly lower for classes in which students used tutors, $F(1,48) = 33.8$, $p < .001$. Thus, students seemed to have expected lower grades in courses in which they received tutoring. They also assigned significantly higher grades to the statement "The grade I want to get in this course" than to the one "In this course, I would be satisfied with a grade of," $F(1,48) = 85.8$, $p < .001$.

Responsibility for Learning: Need to Study and Use of Tutoring

Students' perceptions of the need to study were compared for courses in which tutors were and were not used. If perceived need to study was lower for the course in which they used a tutor, this would suggest that they had shifted some of their responsibility for learning to the tutor. Students were asked to indicate, for each course, their agreement (on 5-point Likert-type scale) with the two items that pertained to need to study. The mean ratings of agreement with these items are presented in the first two rows of Table 2. The analysis of variance of these data indicated that they agreed significantly more often with these items for the course in which they used a tutor, $F(1,49) = 7.12$, $p < .01$.

In addition to these items, which referred only to the need to study, the questionnaire included four others that referred to both the need to study and use of a tutor. Two of these four stated that studying was necessary to get a good grade, and the other two stated that studying was *not* necessary. The mean ratings of these items are displayed in the last four rows of Table 2. The question here was whether students assigned higher ratings to the two items that

Table 1
Mean Ratings of Grade Standards

	Ratings of grade standard for each course	
Statement about grade standards	**Used tutor**	**Did not use tutor**
1. The grade I want to get in this course.	4.18	4.61
2. The lowest grade that will be okay for me.	3.00	3.59
3. In this course I would be satisfied with a grade of	3.71	4.16

Notes. $n = 49$. *A* grade = 5, *F* = 1.

Table 2
Mean Ratings of Statements Regarding Need to Study to Get a Good Grade

Items and type	Rating of agreement for each course: Used tutor	Rating of agreement for each course: Did not use tutor
Need to study		
1. I needed to do my homework carefully.	4.60	4.32
2. I needed to study hard.	4.54	4.12.
Need help from tutor and need to study		
3. I needed help from the tutor and I needed to study hard.	4.51	2.96
4. I needed help from the tutor *and* I needed to do my homework carefully.	4.57	3.00
Need help from tutor but not need to study		
5. I needed help from a tutor but I did not need to study hard.	2.16	1.89
6. I needed help from a tutor *but* I did not need to do my homework carefully.	1.96	1.75

Notes. n = 50. Strongly agree = 5; strongly disagree = 1.

stated studying was necessary to get a good grade, and they did, in fact, agree significantly more often with these items, $F(1,48) = 155.37, p < .001$. In addition, they agreed significantly more often with all four items for the course in which they used a tutor, presumably reflecting their need for a tutor in that course, $F(1,48) = 69.94, p < .001$. Thus, the important results were that (a) use of a tutor did not reduce perceived need to study and (b) need to study was perceived as being greater in the class in which a tutor was used.

Importance of Course

Student ratings of four items regarding the importance of the course were compared for the courses in which students did and did not use tutoring. For each item, students again rated agreement on a 5-point Likert-type scale. There was no statistically significant difference in rated importance of the two courses.

Reasons for Seeking Help

The ratings of 11 different reasons for seeking help were compared with each other. Students rated certain reasons for seeking help as more important than others, as indicated in Table 3, in which the mean ratings are ranked from top to bottom. The overall variation in these means was statistically significant, $F(10,500) = 18.97, p < .001$. It is interesting that three of the five items with the highest ratings pertained to understanding the information in the course: (a) "I need to understand the course better"; (b) "I need someone who can ex-

Table 3
Mean Ratings of Reasons for Seeking Help from a Tutor

Reason for seeking help	Rating of importance of reason for seeking help
1. I need to understand the course better.	4.80
2. I need help to improve my grades.	4.49
3. I need help to study for exams in this course.	4.37
4. I need someone who can explain the lectures to me.	4.20
5. I had trouble understanding what was going on in the course.	4.04
6. I need someone to answer questions about the course.	3.98
7. I need help from someone I can depend on.	3.86
8. I need all the help I can get for my classes.	3.82
9. I got a bad grade on an exam for the course.	3.58
10. I need to improve my study habits.	3.50
11. All my friends get help from tutors. I think I should too.	2.74

Notes. $n = 51$. Very important = 5; not important at all = 1.

plain the lectures to me"; (c) "I had trouble understanding what was going on in the course."

Opinions about Tutors

Ratings of an additional 22 items were compared with each other to obtain information on students' opinions about the tutoring program. The means of these ratings are displayed in Table 4, ranked from top to bottom. The variation in these means was statistically significant, $F(21{,}996) = 22.28, p < .001$. The assignment of the highest mean rating to the item "Tutors are a big help to deaf students" indicated that students definitely viewed tutoring as helpful. Additional evidence of this positive view was provided by the low ratings of negative statements about tutoring. Note that the third highest item dealt with achieving good grades; the fifth highest dealt with using a tutor when in difficulty in a course. These two ratings suggest that students view use of tutoring as a means to academic success, especially when in difficulty. We also see from the item with the second highest rating that they once again indicated that "understanding of the course" is a major concern.

DISCUSSION

The lower "hoped for" and "satisfactory" grades for the courses in which students used tutors suggest that when students perceive courses as more difficult they are more likely to seek tutoring. This idea is also supported by the assignment of relatively high ratings to the statement "Students only use tutors when they have trouble with a course." Both findings suggest students use tutors selectively rather than for all courses.

Table 4

Mean Ratings of Statements Regarding Opinions about the Tutoring Program

Type of Item	Statement about tutor	Rating of agreement with statement
1. Overall	The tutors are a big help to deaf students	4.30
2. Situation	Tutoring is helpful for a general understanding of a course.	4.21
3. Student	Students who want to get good grades use tutors for help.	4.17
4. Situation	Tutors are only helpful when you have a particular question to ask.	3.94
5. Situation	Students only use tutors when they have trouble with a course.	3.87
6. Overall	Deaf students can learn just as much in RIT classes as hearing students because of the help they get from tutors.	3.64
7. Situation	Tutoring is helpful for all courses.	3.64
8. Student	Good students use tutors the most.	3.45
9. Situation	Tutoring is only important for help in your major.	3.23
10. Student	Students who use tutors always need someone to help them do things.	3.15
11. Overall	Deaf students must have tutors if they want to get good grades in RIT classes.	3.09
12. Situation	Students only use tutors when they cannot get help from a friend.	2.98
13. Student	Self-confident students use tutors the most.	2.96
14. Overall	I can use my time better by meeting with the teacher of the course.	2.89
15. Overall	It is better to study with other students than to see a tutor.	2.79
16. Overall	I can use my study time better when I do not see a tutor.	2.62
17. Overall	Getting an appointment with a tutor takes too much time.	2.60
18. Student	All deaf students who take RIT courses should be required to use tutors.	2.53
19. Student	Poor students are the only ones who use tutors.	2.49
20. Situation	Tutoring is only helpful for studying for exams.	2.23
21. Overall	I do better in the course without the tutor.	2.19
22. Overall	Getting help from a tutor is a poor way to study for this course.	1.98

Notes: Types of items: Overall = overall opinion about tutoring program; Situation = situations in which tutoring may or may not be important; Student = kinds of students who use the program. Strongly agree = 5; Strongly disagree = 1

In regard to the question about personal responsibility for learning, the results clearly indicate that use of tutoring does not reduce students' sense of responsibility. In fact, students' ratings of the various questions about studying show that they believed they needed to study harder in those classes in which they used a tutor.

One interesting interpretation of this connection between difficulty of a course, studying harder, and getting help was made by Ames and Lau (1983). They proposed that seeking help when one is having difficulty reflects, in part, motivation to achieve. If one is already putting maximum effort into studying, a way to try still harder is to use external resources such as a tutor. Furthermore, students' higher agreement with two statements in this study is also consistent with the interpretation that motivation to succeed when in difficulty leads students to seek help. These statements were "Students who want to get good grades use tutors" and "Students only use tutors when they have trouble with a course."

While it appears that students already had some sense of responsibility, providers of support services can take steps to further its development. A general policy among tutors at NTID is to encourage tutees to develop greater self-reliance, to acquire more effective study habits, and to become less dependent on the tutor (Osguthorpe, 1980). For example, tutors may encourage tutees to make as much direct contact with the instructor as possible. The greater efforts of students to study in the course for which they received tutoring may have reflected, in addition to internal motivation, this encouragement by tutors.

When asked about reasons for seeking help from a tutor, students assigned high ratings to items that pertained to understanding information in the classroom. An underlying factor here may have been that the hearing-impaired students experienced difficulty in receiving information in the mainstreamed setting, and they perceived use of a tutor as a way to deal with this difficulty. There is evidence that hearing-impaired college students do, in fact, experience difficulty in receiving information (Jacobs, 1977; Osguthorpe, Long, & Ellsworth, 1980). Given this difficulty, it would seem important that tutors be skilled in providing additional clarification of information presented in class. An important component of such clarification is the further explanation of concepts that the instructor discusses in class. Further explanation may involve defining new words or familiar words used in an unfamiliar way; it may also involve providing further examples of the concept.

It is not surprising that students expressed strong agreement with statements that tutoring is an important, helpful support service. These results are consistent with the recommendations of Jones and Murphy (1972), who stated that many hearing-impaired college students benefit from tutoring services; they are also consistent with the research of Osguthorpe (1984), who found that both hearing-impaired students and their professors had favorable attitudes towards tutoring. To be sure, the present results, as well as the work of Jones and Murphy (1972) and Osguthorpe (1984), support the practice of providing tutoring services for hearing-impaired students at many secondary and postsecondary institutions.

This information about the value of tutoring, along with the list of major reasons for seeking tutoring, has practical implications for motivating students who are having difficulty in a course. Students should be more likely to seek tutoring when they perceive it as a means to successfully overcoming their difficulties. When students realize that receiving help from a tutor can improve understanding of courses, they are likely to become more motivated because these are the very areas in which they believe help is most needed. Support services staff can inform students that tutors provide these particular kinds of assistance. Instructors can also advise students about the particular kinds of assistance tutors provide. In addition, students who have been helped by tutoring can share this information with others who are having course difficulties. These strategies should encourge students to act upon their desires to overcome their difficulties, and frequently a viable option will be to seek help from a tutor.

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Characteristics of Students with Learning Disabilities Who Take the ACT Assessment Under Special Conditions

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ABSTRACT

This paper describes the background characteristics and college plans of students with learning disabilities who take the ACT assessment under special conditions. The predictive validity of this standardized admissions test for a subgroup of these students is also reported.

As a group, these students obtained lower high school grades, lower ACT test scores, and lower college grades than regularly tested students. They also had received more special services from their high schools, and anticipated needing more such services in the future, than did the regularly tested students.

Prediction of college grades from high school grades and ACT test scores was less accurate for the specially tested students with learning disabilities. On the average, these students' earned grades were 0.2 points lower than their predicted grades.

THE ACT ASSESSMENT PROGRAM

The ACT assessment is a comprehensive evaluation, guidance, and placement service for students and educators involved in the transition from high school to college. Approximately a million students take the ACT assessment each year.

The academic tests of the ACT assessment measure abilities in four subject areas traditionally identified with college preparatory programs: English, mathematics, social studies, and natural sciences. The English Usage test measures understanding and use of the basic elements of correct and effective writing; the Mathematics Usage test measures mathematical reasoning and problem-solving ability; the Social Studies Reading test measures the reading comprehension and problem-solving skills required in the social studies; the Natural Sciences Reading test measures the reading comprehension, critical reasoning, and problem-solving skills required in the natural sciences. ACT test scores are reported on a standard scale that ranges from 1 to 26. The arithmetic average of the scores on these four tests is the ACT Composite score, which is often used as a measure of overall educational development.

Another component of the ACT assessment is the Student Profile Section (SPS), completed at registration. Through the SPS, students provide information about their backgrounds, extracurricular accomplishments, special academic needs, housing plans, financial needs, planned majors, and career plans.

SPECIAL TESTING ARRANGEMENTS FOR EXAMINEES WITH DISABILITIES

Some examinees with disabilities are unable to take the assessment under standard testing conditions. (Under standard conditions, examinees use regular-print test booklets and take the four subject-area tests in a timed test session of approximately 3 hours.) ACT provides special test forms and special testing arrangements so that these examinees may take the ACT assessment, if they wish. Options include:

- Cassette, braille, and large-type editions of the assessment
- Use of a reader
- Use of an amanuensis to mark responses
- Extended time

The particular options used are arranged on an individual basis.

Persons with disabilities who request special testing must be professionally diagnosed, and proper documentation of the disability must be provided to ACT. Diagnosis and certification of the disability must be provided by a qualified professional with appropriate credentials—for instance, a physician for physical disabilities, a learning disability specialist or psychologist for learning disabilities. Examinees with learning disabilities, who are often diagnosed in the early school years, may present prior official school records about the disability or a letter from a counselor certifying the contents of those records to support a request for special testing arrangements.

CHARACTERISTICS OF SPECIALLY TESTED EXAMINEES WITH LEARNING DISABILITIES

This section compares the characteristics of specially tested examinees with learning disabilities who took the ACT assessment in 1983–84, 1984–85, or 1985–86 (*N* = 5,534) with those of regularly tested students graduating from high school in 1986 (*N* = 729,606).

Background Characteristics

In this sample, 46% of the regularly tested students and 70% of the specially tested students with learning disabilities were male. The racial-ethnic distribution of the two groups appears to be similar, though a larger proportion of the specially tested students (8% vs. 3%) did not identify their racial-ethnic background. The specially tested students more frequently reported annual

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family income levels below $6,000 and above $50,000. They were less likely to express a need for financial aid (14% vs. 19%).

In high school, they were less likely to be enrolled in the college preparatory curriculum (34% vs. 65%) and more likely to be enrolled in the vocational/occupational curriculum (15% vs. 7%) or some type of "general" curriculum (38% vs. 17%). Their high school average was lower (2.38 vs. 2.89, on a 4-point scale).

Satisfaction With High School

The specially tested students with learning disabilities were less satisfied with their high school education than were the regularly tested students. Of specially tested students with learning disabilities, 47% rated the adequacy of their high school education as "Excellent" or "Good," compared to 63% of regularly tested students. Specifically, they were less likely to be satisfied with classroom instruction (48% satisfied vs. 60%), grading policies and practices (36% vs. 52%), and guidance services (47% vs. 56%).

The only area in which a higher percentage of specially tested students expressed satisfaction was "special help" (49% vs. 35%). However, this is probably because regularly tested students had less experience with special help provided by their high school. Of the regularly tested students, 27% reported that they had no experience with these services, where only 4% of specially tested students with learning diabilities had not received services.

ACT Scores

The mean scores and standard deviations for both specially tested students with learning disabilities and regularly tested students are shown in Table 1. Scores are not shown separately for males and females; in both the specially tested and regularly tested groups, males scored higher on all tests except English. Complete data are available from the senior author.

The mean scores of the specially tested students ranged from 4 to 7 points lower than those of the regularly tested students. About 20% of the specially tested students had Composite scores at the 50th percentile or higher on national norms.

Table 1
ACT Assessment Results

	Specially Tested		Regularly Tested	
	M	SD	M	SD
English	13.0	5.1	18.5	5.4
Mathematics Usage	10.4	7.3	17.3	8.1
Social Studies Reading	13.0	6.9	17.6	7.3
Natural Sciences Reading	17.5	6.4	21.4	6.4
Composite	13.6	5.4	18.8	5.9

Future Plans

The specially tested students with learning disabilities were less likely to plan to attend college full-time (81% vs. 91%), and their ultimate degree aspirations were somewhat lower. (See Table 2.) They were more likely to select majors in the trade/industrial area (7% vs. 3%) and more likely to be undecided as to major (16% vs. 9%). They were less likely to select majors in the areas of health professions (5% vs. 13%) and engineering (5% vs. 9%).

The specially tested students with learning disabilities were less likely to plan to take honors and advanced placement courses than were the regularly tested students. They were more likely to anticipate a need for educational assistance in the areas of writing (59% vs. 29%), reading (75% vs. 30%), study skills (73% vs. 45%), and mathematics skills (70% vs. 43%).

PREDICTIVE VALIDITY OF THE ACT ASSESSMENT

Many institutions using ACT assessment results request that first-year college grade predictions for prospective students be developed using regression equations established on the grades of previously enrolled students. Predictor variables are self-reported grades and ACT test scores of regularly tested students. Consequently, many of ACT's test record files contain predicted grades at one or more institutions for examinees. *If* these examinees enroll at these institutions and *if* the institutions continue to participate in certain of ACT's research services, ACT eventually receives a report of the actual first-year college grades earned by the examinees.

Thus, if one could compare the predicted and earned grades at a given college for regularly tested examinees and for specially tested examinees with learning disabilities, it would be possible to learn whether the prediction equation used was equally accurate for both groups at that college. Unfortunately, this has not been possible because of the small number of specially tested examinees with learning disabilities who enroll in a given college in any single year. However, by pooling across institutions and across years, 792 (545 male, 247 female) examinees with learning disabilities were found for whom both predicted and earned first-year grades were available.

Table 2
Degree Aspirations of Tested Students

	Vocational-Technical	2-Year Degree	Bachlelor's Degree	MA, MBA, etc.	Professional Degree	Other
Specially tested	6%	17%	47%	12%	12%	6%
Regularly tested	2%	9%	43%	17%	25%	3%

The specially tested students with learning disabilities for whom college grades were available had earned somewhat higher ACT scores than the sample described previously. Their scores were, however, still lower than those of the regularly tested students. These mean ACT scores and standard deviations were English, 14.5 (5.0); Mathematics, 12.7 (7.0); Social Studies, 15.3 (7.1); Natural Sciences, 19.4 (6.2); Composite, 15.6 (5.3). Mean scores and standard deviations for the other two groups are shown in Table 1.

When the individual institutional regression equations, which are established on data from regularly tested examinees, are used to predict grades, the correlation between predicted and earned college GPA is about .59 for regularly tested examinees (Maxey & Levitz, 1980). When these equations are used to predict grades of the 792 specially tested examinees with learning disabilities, the correlation between predicted and earned college GPS is about .42. The regression equations established on data from regularly tested examinees overpredicted, on the average, the college grades for these specially tested examinees with learning disabilities. Their average predicted grade point average was 2.1; their average earned grade point average was 1.9.

DISCUSSION

The data presented in this paper indicate that, as a group, the specially tested students with learning disabilities are less academically successful than their regularly tested counterparts. They have lower high school grades, lower ACT test scores, and lower college grades. They have received more special services from their high schools and expect to need more developmental or remedial assistance as college students. Assuming that these students' academic *potential* is equal to that of the regularly tested students, it seems clear that attempts to help these students overcome their disabilities have not been wholly successful.

The ACT assessment is a curriculum-based test. Recent studies (Cargile, Maxey, & Laing, submitted for publication; Laing, Engen, & Maxey, in press) show a strong relationship between test scores and completion of coursework in the relevant content area, especially for mathematics and natural sciences. It is possible that, to some extent, these specially tested students score lower on the test because they have not completed the college preparatory coursework covered by the test. (Recall that only about one-third of these students were enrolled in a college preparatory curriculum, as opposed to two-thirds of the regularly tested students). Detailed information on high school coursework completed has been available to ACT only since the fall of 1985; when sufficient data are available for learning disabled students, a study is planned to compare high school courses completed and grades earned by these students and by the regularly tested students.

One of the reasons for performing the study described in this paper was to learn whether the ACT assessment, administered under special conditions, discriminates against specially tested students with learning disabilities. At least for those students for whom both predicted and earned grades were available, it appears that this is not the case. Scores on the ACT assessment, combined with high school grades, actually overpredicted the college grades of these students.

However, prediction is less accurate for the specially tested students with learning disabilities. At present, it is not possible to determine whether this is due to the test or testing conditions, whether it is due to the fact that the prediction equations were developed on data from regularly tested students, whether it is a function of greater homogeneity of the group of students with learning disabilities compared to regularly tested students, or whether it is related to the variability of special services and accommodations available for learning disabled students at different postsecondary institutions.

It should be recalled that the data presented in this paper are *group* data. Clearly, individual students with learning disabilities do attend college, obtain services appropriate for their needs, and succeed. Further research is needed to identify these students and to learn what characteristics are associated with their success. The results of such research could then be used to help all college-bound students with learning disabilities as they strive to attain their full potential.

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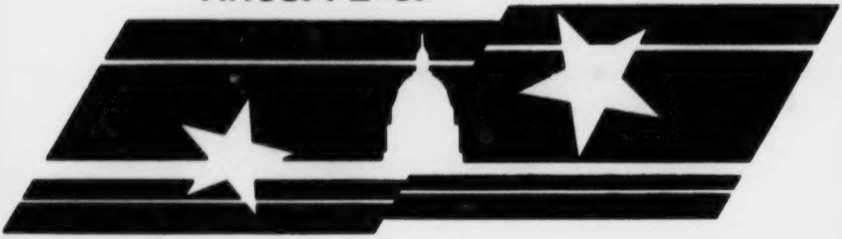

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NEW ORLEANS 1988

Speak Out

Sour Grapes or Just Deserts?

Deborah Gately McKeen, MEd, *Pima Community College, Tucson, AZ.*

I just finished reading the July issue of *Playboy* Magazine and found myself pondering why it was that I, an avid feminist, a counselor for disabled students on a college campus, and a woman with a disability, was not offended or appalled by the obvious objectification of Ellen Stohl. A woman with a spinal cord injury, she has recently come to the fore as someone who approached Hugh Heffner with her wish to be photographed for his magazine. Could it be that all these years of devout commitment to women's issues have been no more than sour grapes over the perpetual elimination of women with disabilities from the arena of sexual exploitation?

From an intellectual perspective, it seems that the objectification of women has persisted through the years as a means of maintaining roles of sexual power. By this I mean that one's role is often defined by the power, or lack thereof, it wields in maintaining the status quo. If one accepts that society has been principally male-dominated, then it would follow that the dominant sex, males, would hold power and be capable of continuing a state of sexual status quo or sexual power.

Each potentially desirable woman must vie for the attention of the man she perceives as possessing power. The coveted man may or may not respond. If she is the chosen female, then her status among her peers should improve to, at least, that of a competitor. It might follow that other males would find her appealing as well, thus creating another possible rise in proximity to power. It is not surprising, therefore, that a woman might choose to use vehicles such as *Playboy* to attempt to be seen as one of the most desirable specimens of the sex.

Disability for women is handicapping in relation to sexual power. To validate this belief, one must accept that there is a standard by which sexual desirability is measured and that, historically, men have defined its terms. The terms have changed focus throughout the years—large breasts, small breasts, lithe or Rubinesque bodies—but dysfunction has never served to enhance a woman's desirability or consequent ability to spar in the arena of sexual power.

Ellen Stohl has overcome the handicapping aspect of her disability. She has entered the competition and can vie for the status of desirable specimen. I cannot begrudge her the opportunity to align herself with sexual power. The system, apparently, remains intact and women with disabilities have the right to be exploited equally.

Integration of Individuals with Disabilities in Higher Education: A Review of the Literature

Jane E. Jarrow, PhD

Executive Director, The Association on Handicapped Student Service Programs in Post-Secondary Education

The information in this article was originally compiled and published as a Rehabilitation Research Review produced by NARIC, which operates under contract to the National Institute of Rehabilitation Research; 1986

This report will review the available literature concerning the integration of persons with disabilities into postsecondary education. To better understand the findings of this literature search, it is first necessary to review briefly the history of the inclusion of students with disabilities into our nation's colleges and universities.

The earliest recorded support for the availability of higher education to people with disabilities came with the passage of legislation establishing Gallaudet College (a liberal arts college for individuals with hearing impairments) in the 1860s. While there are occasional formal reports of an individual with a disability successfully graduating from college in the years that followed, there were no programs established for general support of such students in institutions of higher learning until the mid-1940s. At that time, isolated programs developed in colleges and universities across the country.

Through 1960, the programs established appear to have numbered less than two dozen. They existed at unrelated campuses (i.e., available through individual campus efforts rather than any systemwide philosophy or commitment), tended to have extremely diverse types and levels of support available, and chose to provide services at the discretion of the administration or faculty. The years from 1960 to 1970 showed a tremendous advance in the philosophical commitment to expanding educational opportunities for individuals with disabilities. This was especially true for hearing impaired students; the establishment of the National Technical Institute for the Deaf and the expansion of programming available through Gallaudet College were the precursors of expanded opportunities for deaf and hearing impaired students nationwide. However, architectural barriers were still very evident on most campuses, and the concept of "programmatic access" remained largely unexplored. In the early 1970s, a number of colleges and universities chose to pursue the changes necessary to make their campuses and programming accessible to individuals with disabilities. While these programs are to be congratulated for their efforts and their foresight, the fact remains that 90% of the progress in the field of supportive services for students with disabilities in higher education has been made in the past 10 years. The consensus among members of the disabled community and professors working in the postsecondary education of students with disabilities is that even this can be traced directly to the passage of the Rehabilitation Act of 1973 and its accompanying Section 504 Regulations. This Act *mandated* programmatic access to higher education for qualified individuals with disabilities:

> No otherwise qualified handicapped individual . . . shall, solely by reason of his handicap, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance. (Section 504 of the Rehabilitation Act of 1973, May, 1977).

Whether the leaders in the field of postsecondary education would have come to support such access on their own initiative is a moot question. With the implemation of Section 504, colleges and universities across the country became responsible for providing access to students with disabilities. They have, for the most part, moved graciously and aggressively to meet challenges presented in adapting "traditional" settings and teaching practices to meet the needs of these nontraditional students.

Essentially, then, the issues inherent in the successful integration of individuals with disabilities into higher education are still being defined. The scope of responsibility for support service providers continues to expand. The author has chosen to limit the review of the literature in this field to the 10-year period from 1975 to 1985 for two reasons: (a) the majority of written information available in the field appeared within this time frame, and (b) any literature appearing before this time would be of interest only in an historical sense—the population of students with disabilities being served today bears little resemblance in numbers, type of disability, available support/service technology, or level of preparation to those students with disabilities who proceed them through institutions of higher learning.

SCOPE

The body of literature reviewed for this report includes information from rehabilitation, special education, student services, career counseling, general disability services, and the recently developed field of support services for students with disabilities in higher education. The rapid expansion of this last group is demonstrated by the growth of a national association for professionals in the field (the Association on Handicapped Student Service Programs in Post-secondary Education [AHSSPPE]). This organization has expanded from 32 charter members in 1978 to more than 650 individuals representing over 425 institutions of higher education in 1985. It is important for the reader to keep in mind the newly developed (and developing) nature of the field in order to understand the emphasis on program description and review, rather than data-based research, in the available literature. As will be seen, what few research-oriented studies are available have, in the main, been conducted within the last 3 to 4 years, and many have yet to find their way out of *Dissertation Abstracts* and into the body of published literature.

Ideally, a new field of study and research grows in response to an awakening need for information or as an outgrowth of a field of service/support currently being evaluated for its effectiveness or impact. Support services to students with disabilities grew dramatically (in an amazingly short time) and have little grounding in any existing discipline. The support services provided to such students in college are very different from the habilitation/rehabilitation training traditionally provided in special education or rehabilitation counseling. The programs often came into existence overnight as independent entities, established in response to legal mandate. There were no training programs available to prepare personnel to staff such positions, no institutional precedents for the new problems being encountered on an almost-daily basis, and few models available to guide the service provider in establishing guidelines and policies. By necessity, then, the early literature in the field centered around a sharing of information, experience, and expertise; the stress was on implementation of the various facets of programming and the continuing exploration of roles and responsibilities.

In preparing this report, the author reviewed more than 350 abstracts, articles, books, and other documents concerning integration of students with disabilities into higher education. The available literature seemed to fall loosely into seven categories:

- Attitudes/awareness issues for various segments of the campus community
- Directories of available programs
- Program descriptions/comparisons
- Discussion of transition problems/strategies/statistics
- Information providing practical suggestions for service to various populations
- Students with disabilities as a homogeneous population for study
- Definitions/diagnosis/support for students with learning disabilities

A general overview of information in each area will be reviewed. Based on the issues raised through review of existing information, this report concludes with a list of 15 suggestions for future exploration and study.

Attitudes/Awareness toward Students with Disabilities

Most of the literature dealing with attitudinal barriers toward students with disabilities closely parallels similar studies regarding attitudinal barriers in the society as a whole. Studies that assess the attitudes of faculty or able-bodied students consistently find women to have significantly more positive attitudes than men (Cortez, 1983; Fonosch, 1979; Patton, 1981). Attitudes do not seem to be related to age or educational background (Patton, 1980; Weinberg, 1978) but *are* related to the amount of direct contact individuals have had with people who are disabled (Nathanson, 1982; Newman, 1976; Pearsall, 1982; Stovall & Sedlacek, 1983; Weinberg,1978). Traditionally, support service providers have spent time and energy in hosting disability awareness workshops and activities for various members of the campus community. A number of studies (Avery, 1982; Cairns, 1980; Cortez, 1983; Miller, 1980; Moore, 1983; Pomerantz, 1983; Rice, 1979) show that such activities may increase participants' knowledge of disability-related issues and their willingness to make accommodations, but do little to change underlying attitudes toward students who are disabled.

In 1979, Fonosch converted an attitudinal measure by several early researchers (the *Attitudes Toward Disabled Persons Scale*) to be used specifically in relation to students in the postsecondary setting. This adapted instrument, the *Attitudes Toward Treatment of Disabled Students Scale*, was shown to be reliable and valid with Fonosch's population of university faculty. Its specialized nature makes it a more appropriate measurement tool for this specialized population than are more general attitudinal measures.

Another body of literature is composed of articles and presentations directed to specific populations that attempt to influence attitudes toward individuals with disabilities. Of special note in the area of attitudes/awareness is a 24-page pamphlet by Harris (1984) that is addressed to the service provider. The booklet, *Reflections Through the Looking Glass*, discusses attitudinal issues and presents the philosophical underpinnings of service provision at the postsecondary level, as advanced by many of the founding members in the field.

A few studies have examined attitudes *of* students with disabilities toward themselves, their surroundings, and their integration into the campus community. These studies will be discussed in the section of this review that deals with students with disabilities as a single population for research.

An unexpected finding of the literature review in this area has to do with the use of language and terminology in describing the population. Some studies dealt specifically with the impact of the use of language and the description of students with disabilities on the attitudes of others (Ianacone et al., 1978; Minner & Prater, 1984). The studies consistently found that people *are* influenced by the description of individuals with disabilities, and many attitudinal barriers can be traced directly back to the use of less positive terminology. These findings are not surprising in themselves; they echo many similar studies in the general body of rehabilitation literature. What *is* surprising is that knowing the problems engendered by the use of terminology and the dangers of creating or nurturing attitudinal barriers through poor terminology, these researchers continue to be cavalier in their own use of language in describing the population under study. Throughout the body of literature reviewed for this report, phrases such as "victims of," "suffering from," "confined to a wheelchair," and "wheelchair-bound" appeared with distressing frequency. Also prominent was the use of terms meant to be used as adjectives, but employed as nouns in description of students: "the handicapped," "the hearing impaired," "the learning disabled," etc. Because available evidence indicates that attitudinal barriers are as much a matter of what we say as they are of what we do, it would behoove those professionals involved in studying and promoting successful "mainstreaming" of this population to set an example for others.

Directories of Available Programs

The literature reviewed included a large number of resources presenting lists or descriptions of existing support programs for students with disabilities in higher education. In the mid-to-late '70s, these listings probably appeared necessary or appropriate because of the paucity of accessible campuses and organized programs of support (Anderson et al., 1981; Anthony, 1981; Clissold & Davis, 1981). These initial listings/descriptions tended to provide information about several programs without attempting any qualitative judgments of the level or type of support available. Similar listings in recent years *have* included some judgment on the adequacy of services or purported to include only those programs meeting certain standards of excellence.

There are several cautions to be considered in reviewing these resources. As previously indicated, the field of support services in higher education for students with disabilities has grown so rapidly in the past 8 years (since the implementation of Section 504) that any such listing is likely to be dated by the time it reaches its audience. Several of these listings were compiled from surveys sent to colleges and universities across the country; these tended to be "blind" mailings sent to the Dean of Student Affairs or Academic Affairs (e.g., McGeough & Thomas, 1983). Many of the survey forms did not reach the individual(s) on campus most likely to be in a position to respond accurately with the information requested; the quality and quantity of information reported from such surveys is, therefore, questionable. Other resources that present restricted listings based on a judgment of quality of programming (e.g., Liscio, 1985) should be examined carefully to determine *how* and *by whom* this judgment was made. Often, the authors of such lists are not practitioners in the field; their view of what constitutes a quality program may be arbitrary.

Program Descriptions/Comparisons

Many of the references reviewed were simply descriptions of the implementation of programming at a given institution(s) (Fabac, 1981; Gerardi, 1981; Kolstoe, 1978; Stilwell et al., 1983; Thomsen, 1979). This is not surprising in a field as young as that of support services for students with disabilities in higher education. Because hundreds of programs were at essentially the same stage of development in the late 1970s, these references served to provide the only existing written blueprints for implementation against which service providers could compare the progress on their own campuses across the country. The schools in the California state system have a program evaluation project in process that may provide guidelines in this area in the future.

Included in this category of program description/comparison are those references that deal with some aspect of evaluation of programs and services provided for students with disabilities (Baker, 1981; Ford, 1981; Lesh, 1981). The articles by Blosser (1983), Smith (1983), and Sellitti (1981) are among the few that detail procedures for such evaluation. Generally, little evaluation of program effectiveness has been done and very little of the evaluation that has taken place has been done from within the programs being examined. It would appear that those actively involved in service provision have been occupied in building and expanding services, rather than evaluating current services for effectiveness or providing direction for change. The study by Zadra (1982) is of interest in that it indicates that incoming students are not necessarily able to assess accurately the type or degree of support services they will need.

Transition Problems/Strategies/Statistics

A limited number of documents discuss the problems encountered by students in making the transition from secondary to postsecondary education. A few resources give specific suggestions (Ford, 1981; Monahan et al., 1983) or provide information about specific populations of students with disabilities regarding the necessary academic or psychosocial preparation for higher education (Capozzoli, 1984; Jarmul, 1977; Peterson et al., 1983; White & Harkins, 1983). Statistics indicate that fewer than 40% of those students with disabilities who graduate from high school and might be considered college-qualified are actually pursuing or succeeding at higher education (Corrado & Colfer, 1981; Kirchner & Simon, 1984a, 1984b). Statistics available for nondisabled students indicate percentages in the range of 50 to 65% successfully pursuing higher education. It would appear that there are, as yet, some unexplored areas that negatively impact on students with disabilities who attempt to continue their education beyond high school.

This area of transition programming is currently under study from a number of directions. A pamphlet entitled *How to Choose a College: A Guide for the Student with a Disability* is currently available through Higher Education and the Handicapped (HEATH). This publication is directed toward high school students with disabilities and their parents. It attempts to put them in touch with the most important issues to be considered in making a decision regarding college enrollment. Transition programming has been an on-going priority of the U.S. Department of Education since spring of 1983. The development of model programs to facilitate transition has been undertaken at a number of institutions across the country, but tangible results of these efforts are not currently available in the print media.

Practical Suggestions for Service

A sizable body of literature in the field describes specific strategies used for accommodating students with disabilities in higher education. These strategies are classified by the population they are meant to assist, or by the service/program that has been adapted in order to provide access. (Note: Information dealing with accommodations for individuals with learning disabilities will be discussed along with the multitude of other references to this population in a separate section below.)

A great deal of "how to" information has been published by Gallaudet College (Gallaudet, 1982; Goldberg & Bordman, 1975) and the National Technical Institute for the Deaf (Albertini & Samar, 1983; Childress, 1981; McKee et al., 1984; Penna & Caccamise, 1978; Saur et al., 1984; Stuckless et al., 1983). It specifically highlights effective strategies for helping students with hearing impairments in higher education. The information from Simon (1981) and Wilson

(1981) must be considered among the most notable because they describe the two cornerstones of service to students with hearing impairments: interpreter services and notetaking assistance.

Another body of information has been directed to the accommodations available for the students with visual impairments in higher education (Chang, 1984; Ford, 1981; Kirchner & Simon, 1984a, 1984b; National Federation of the Blind, 1979; Sperr et al., 1982). Of note is the recent trend toward specific information regarding technological innovations (e.g., Day, 1983; *Up Front*, 1982). There appears to be more technological options to traditional learning patterns for students with visual impairments than for students with other types of disabilities (who tend to rely on human intervention strategies).

A concerted effort to facilitate and promote academic access for students with disabilities seems to have been systematically pursued in the areas of science, math, and engineering. References are available providing role models for students with disabilities in science and engineering (American Association for the Advancement of Science, 1986; Stearner, 1984), specific adaptations/accommodation strategies in teaching science (Farbman, 1982; Reese, 1981; *Up Front*, 1982; Zimmerman & Redden, 1983), as well as philosophical/attitudinal discussions of accommodation for students pursuing various scientific fields (Redden et al., 1979; Stanley, 1984).

Traditionally, schools that sponsor programs of vocational education have seen students with "special needs" (a term encompassing disabled, disadvantaged, and academically underprepared students) as being a major target population for training, and a great deal has been written concerning the adaptation of vocational education curriculum materials for students with disabilities (Davis, 1984; Gugerty et al., 1981; Pearsall, 1982; Shackelford & Henek, 1982). Other fields that have actively promoted accommodation to their practitioners have been those of library services (Bowen, 1983; Deveaux, 1982; Jackson, 1982; Thomas & Thomas, 1983), physical plant supervisors (Coons & Milner, 1978; Cotler & DeGraff, 1976; Mueller, 1981), and student personnel services (Marion & Iovacchini, 1983; McLoughlin, 1982; National Association for Women Deans, Administrators, and Counselors, 1982).

A number of documents deal with the career counselor's role in assisting students with disabilities in career planning and placement (Fonosch et al., 1982; Murphy et al., 1978). Several of these references indicate that specialized assessment techniques and evaluation of potential may be appropriate in helping students with disabilities make informed decisions regarding work options and conduct a successful job search (Katz, 1982; Lonnquist, 1979; Schroedel & Jacobson, 1978). While a great deal of literature is devoted to writings directed specifically to postsecondary faculty detailing the reasons and methods for classroom accommodation (e.g., Mainstream, Inc., 1983; Smith, 1979), few have compared or contrasted alternative techniques for providing educational access.

The largest body of literature written for service providers is also written *by* service providers. While there are some excellent references concerning program implementation written and published in the general press (e.g., Jastrum &

McCombs, 1981; Redden, 1981; Sprandel & Schmidt, 1980), much of the pertinent literature resources are available from HEATH Resource Center (an information dissemination agency with specific responsibility in the field of Higher Education and the Handicapped) and through AHSSPPE. The latter has published proceedings of annual conferences since 1977; specific articles from within these volumes are referred to throughout the text, as appropriate. Along with studies detailing how service should be provided, there are also studies of the personnel who should and could provide such service (Frady, 1982; Kelly, 1984; Scales, 1982).

Studies of Students with Disabilities in Higher Education

The single largest group of data-based studies in this area use students with disabilities in higher education as subjects. Studies have examined students with disabilities from a variety of perspectives in an attempt to differentiate them from nondisabled students. The majority of these studies concluded that, contrary to hypothesis, students with disabilities are not significantly different from their nondisabled peers—they are, in fact, part of the larger population of "students in postsecondary education" and their status as disabled has little impact on their attitudes, adjustment, potential, or goals. (Note: Exceptions to this general finding seem to occur primarily when the student population involved is limited to learning disabled students; these studies will be discussed under the general heading of Learning Disabilities below.)

Burkhead and Cope (1984) explored the vocational maturity of students with disabilities and found no significant differences between such students and their nondisabled peers at similar stages in their academic careers. Forsberg (1984) examined the factors that influence students with disabilities in choosing among 2-year, 4-year, public, and private institutions. The study found that students with disabilities make such choices on much the same basis as their able-bodied peers. Studies exploring the self-concept, academic, and psychosocial adjustment of students with disabilities showed that students with disabilities did not differ greatly from the norm (Hurko, 1982; Lazar, 1978; McBride, 1983; Mitchell, 1982; Moreau, 1983; Turk et al., 1984) and that the type of disability, age at onset, and length of time since onset/diagnosis did not impact differentially on students' attitudes or achievements (Bohan & Feldmeyer, 1984; Kroeger, 1984; Murphy, 1976; Thacker, 1980; Thurber, 1981; Thvedt, 1984). References that presented information *from* students with disabilities regarding their feelings of acceptance within the college community indicated that the students were generally satisfied with their college campuses (Kay, 1983; Thacker, 1980; Yates, 1981).

Learning Disabilities

Among students in postsecondary education, the disability grouping that has received the most attention in the media is individuals with learning disabilities. Almost without exception, these references have appeared since 1980. In the early days of the field, providing support for students with disabilities meant assuring physical access for mobility-impaired students and classroom support for students with sensory impairments. The college-aged student with a learning disability could not be clearly identified, often was not academically prepared for the educational challenges of college programming, and was generally not being served.

Anecdotal reports routinely indicate that students with learning disabilities comprise the single largest contingent of students with disabilities being served on American campuses today. With the rapid growth of this population, service providers have put new emphasis on programmatic access. Unfortunately, many of the issues that faced learning disabled students in the early days remain unresolved. The most distressing issue evident from a review of existing documents is the lack of a valid, reliable, generally accepted definition or description of the college-aged learning disabled student. Without such consensus, all studies purporting to draw conclusions about the population are subject to question as to their broad applicability.

Two distinctly different approaches to serving the learning disabled population have developed in the last few years. Blalock and Dixon (1982) used the terms *selective environment* and *adaptive environment* to differentiate between these approaches.

In *selective environments*, learning disabled students are admitted to a learning disabilities support program within the institution, often using nonstandard criteria for determination of admission. Students receive specialized services that may range from self-contained classes to intensive tutoring to controlled living environments; all of these services are tailored to the special needs of students with learning disabilities. The programs generally have the luxury of selective enrollment, may involve additional cost to students above normal tuition, and often provide a level of individual contact, counseling, and supervision not typically associated with the postsecondary experience. They are *selective environments* in that they are designed specifically for the learning disabled population and students involved in these programs seek them out because of their excellence in working with the learning disabled individuals.

In *adaptive environments*, support services are provided to learning disabled students in the same context that they are provided to students with other disabilities—as the accommodations necessary to provide the student with the same educational access available to nondisabled students. The goal is *not* to provide a level of service or programming beyond that available to the other students. Students are accepted to institutions on the same basis as nondisabled students. The emphasis is on integrating the learning disabled student as fully as possible into all phases of typical academic and extracurricular activity. Support services necessary to facilitate participation are provided, but little or no programming is created specifically or exclusively for learning disabled students.

There may be major philosophical differences between service providers in these two very different types of programs. Certainly, there are differences in the types of learning disabled students who can be successful in programs with such dissimilarities in structure. Some students will be most successful in one type of program, some in the other. The problem is that students in both types of programs are classified as learning disabled and currently viewed as part of the same population. It would be logical to assume that the students represent two distinct groups of individuals who may have similar educational symptomatology but vary greatly in their degree of disability, educational backgrounds, and (perhaps) aspirations for the future. Until the homogeneity of learning disabled students is proven or disproven, generalizations based on studies limited to selective environments (e.g., Biller, 1982; Huebschmann, 1983; Williams, 1980) must be carefully considered.

Recognizing the possibly diverse nature of the population being examined, most of the references concerning students with learning disabilities in postsecondary education can be comfortably classified into the same five areas discussed for the general body of literature, with the addition of a large number of references in an otherwise unexplored area—that of definition/differential diagnosis. Each of these areas will be discussed briefly.

In writing about all other populations of students with disabilities, authors have used the federal government's definition of *handicapped* in conjunction with a commonsense approach to the determination of functional limitations as a result of physical or sensory impairments. While there may be some fine distinctions made in terms of degree of disability (e.g., hearing impairment vs. deafness), there is no discussion of *what* the disability is ... only its impact on the learner and the learning environment. The term *learning disability* is actually an umbrella term describing any or all of a number of distinct functional limitations. It takes various forms and degrees. Thus far it has defied clear, consensual definition, which has complicated the process of identification. A large number of articles are devoted to attempts to resolve these questions, provide guidelines for diagnosis, and differentiate between specific learning disabilities and related problems (Cohen, 1983; Fine, 1980; Goldberg, 1983; Hayes, 1984; Helton, 1983; Huntimer, 1984; Knowles & Knowles, 1983; Weller & Strawser, 1980; Williams, 1980).

Several references attempt to provide directories of programs for learning disabled students (Clissold & Davis, 1981; Cordoni, 1982; Liscio, 1985; Mangrum & Strichart, 1983; Ostertag et al., 1982). The educational opportunities available to learning disabled students are increasing so rapidly that such listings are almost certainly outdated by the time they are printed. Moreover, they generally fail to distinguish between selective environments and adaptive environments in explaining which programs they have included. Literature that details the steps to implementing programming for students with learning disabilities (Barbaro, 1982; Harvey, 1983; Scheiber & Talpers, 1985; Vogel, 1982) or that describes model programming for such students (Boxer & Doonon, 1981; Sedita, 1980) has more practical application for investigators in the field.

Practical suggestions for providing accommodation for learning disabled students are aimed at both the faculty member and the service provider (Association for Children and Adults with Learning Disabilities, 1983; Brown, 1981; Cordoni & Snyder, 1981; Gregg, 1982; Rogan, 1983; Schmidt & Spradel, 1982; Siegel, 1982; Vogel & Sattler, 1981). Of note are a series of booklets published by the 1982 HELDS (Higher Education and the Learning Disabled Student) Project that provide specific suggestions for classroom accommodation in various specific areas of study. As with other areas of disability, the majority of information regarding program organization or practices is available in the proceedings of past conferences from AHSSPPE.

Finally, recent studies have attempted to define learning disabilities in the college population by detailing the common characteristics and behaviors of individuals diagnosed as learning disabled. Studies have looked at career maturity (Biller, 1982), learning styles (Goldberg, 1983), locus of control (Huebschmann, 1983), self-concept (Kosarych, 1984), social readiness (Barsch, 1982), and learned helplessness (Crosby & Hunter, 1983). As noted before, findings varied from highly significant to no differences between the learning disabled and non-learning disabled college-aged population. It can be presumed that the lack of definitive results may be a function of the very diverse population labeled learning disabled.

RECOMMENDATIONS FOR FURTHER RESEARCH— FUTURE DIRECTIONS FOR STUDY

The recommendations offered are suggested by the gaps or weaknesses in currently available literature regarding the provision of services to students with disabilities in higher education. For purposes of clarity, these recommendations are grouped under the same headings used in reviewing existing literature.

Attitudes/Awareness toward Students with Disabilities

(1) It is recommended that Fonosch's *Attitudes Toward Treatment of Disabled Students Scale* be evaluated, refined, validated, and (if advisable) expanded to whatever degree necessary to assure its place as the instrument of choice in evaluating attitudes toward students with disabilities. Until the *Scale*'s reliability and validity are examined, there is no measurement device available to researchers that speaks to the specific issues around which discussions of accommodation in higher education must revolve.

(2) Thus far, research has dealt primarily with the measurement of attitudes, rather than with their improvement. It may be that it is impossible to alter attitudes, through short-term programming—that such change comes about only through time and contact with the population. If such is the case, then resources expended in attempts to change attitudes are fruitless. We will not know until we have explored the options and available techniques in more detail.

(3) It is recommended that all researchers and writers in the field of disability services heed the warning of existing resources concerning the impact of language usage in describing this population. Authors should make concerted efforts to avoid misleading, inappropriate, or outdated terminology. Researchers are admonished to remember that

their subjects are *people* who have disabilities and thus should be defined by their "humanness," not their status as disabled.

Directories of Available Programs

(1) It is recommended that concerted efforts be made to disseminate generic information concerning the variety of support programs available to students with disabilities, rather than try to create lists of programs found at special institutions. With the rapidly expanding nature of the field, such listings are usually incomplete and almost certainly outdated by the time they reach the consumer. Directories of "Programs for Students with _____ Disability" encourage students to choose their college or university based on their disability, rather than on their abilities and interests. If we truly believe that students with disabilities are as capable as their able-bodied peers, we must encourage them to think of themselves as *students* first. The existence of a disability requiring support should be a consideration, not an overriding concern.

Program Description/Comparison

(1) It is recommended that a logically constructed and detailed format for program evaluation of support services to students with disabilities in higher education be developed and widely disseminated. Until service providers begin to keep consistent and reliable records regarding student retention, success, accommodation, etc., it is difficult to make a meaningful comparison of programming options, techniques, and methods at various institutions.

(2) A great deal of money and effort have been expended in recent years to develop demonstration programs for service to students with disabilities; relatively few reports of such efforts have found their way into the literature regularly available and used by the individuals who would be in the best position to implement such models on their own campuses. It is important that reports of such experimental programming be generated, but where these reports are to appear (i.e., the target audience for dissemination) deserves equal consideration.

Transition Problems/Strategies/Statistics

(1) It is recommended that immediate efforts commence to define the population of students with disabilities in higher education so that it is possible to conduct a thorough and widespread census of their number, their ages, their disabilities, their prior educational experiences, their success rate in postsecondary education, their transition to the world of work, etc. Until such a census is conducted, all programming

decisions are based upon assumptions rather than facts. There are no currently available reliable figures in any of these areas that encompass the total population of college students with disabilities. While such census figures are likely to remain incomplete because they are dependent largely upon student self-report, a census of those students with disabilities being served would provide much-needed substantiation for policies and procedures.

(2) Reports from service providers consistently cite difficulties in adjustment for students moving from secondary school special education programming to mainstreamed higher education settings. There is speculation among educators that these transition difficulties may be traced directly to the differences between the nurturing type of support available in the secondary school setting and the independence-oriented support available in higher education. It is recommended that this perceived gap be explored in detail and that specific plans and programs be designed to assist students in making a smooth transition from one type of service provision to another.

Practical Suggestions for Service

(1) While disability-specific information regarding accommodation and support is necessary and helpful to the service provider, it is currently difficult to find a coherent plan to be followed in the initial organization of services to all students with disabilities. While reports of specific techniques and methods should continue to be made available, it is recommended that the wealth of knowledge/information/experience gained over the past 10 years by those directly involved in service provision be compiled in some usable format to help the newcomer to the field in developing both a philosophical and practical base of operations.

(2) It is recommended that efforts to define the necessary skills (and education) of individuals providing direct service to college students with disabilities be initiated from within the field of service provision, rather than imposing standards from related fields (e.g., rehabilitation counselors, regular educators, adminstrators in higher education). Individuals in those related professions are likely to have understandably biased views as to the requirements for a good practitioner. Those formerly and currently involved in the myriad of duties and responsibilities engendered in such programming are best prepared to accurately evaluate necessary attributes for effective professionals in the field.

Studies of Students with Disabilities in Higher Education

(1) Thus far, the majority of studies comparing disabled postsecondary students with their nondisabled peers have failed to uncover significant differences between these populations. Such findings are in keeping

with the underlying premise behind the implementation of support services for these students—that students with disabilities are more *like* every other student than they are *different*, and that given appropriate support, they can be equally successful in pursuing a postsecondary education. It is necessary to continue to monitor this issue; if significant differences in demographic variables, attitudes, adjustment, academic success, etc., were determined to exist, immediate steps could be taken to eradicate these differences. However, it is recommended that future studies focus on showing that college students with disabilities are part of the larger population of "college students" rather than on attempts to categorize them as a distinct population.

Learning Disabilities

(1) It is recommeded that specific criteria for learning disabilities be established for use within the literature, reflecting the widely differing subgroups of individuals with varying types of processing problems or degrees of severity. Much of the currently available research is, at best, useless and, at worst, misleading because of the wide disparity in the students being identified as learning disabled for research purposes.

(2) It is recommended that all research and discussion of learning disabled students and programs in higher education begin with a clear statement of the type of program (and student) included in the discussion. The population of "learning disabled students" is much too broad to allow educators to draw useful conclusions without knowing how closely the subjects or the programs parrallel their existing constituency.

(3) More evaluation and assessment tools are needed that are prescriptive, rather than diagnostic, in nature. Currently, diagnosis of a learning disabilitiy is largely the realm of the psychologist or neurologist rather than the educator. The types of symptoms or performance that confirm the existence of a learning disability do not necessarily translate into specific plans. Educators need valid and reliable measures to assist them in suggesting accommodations and compensation strategies for learning disabled students. Currently, evaluation provides us with a great deal of information on student weaknesses, but very little concerning student learning strategies.

(4) The number of identified learning disabled students in higher education is growing more rapidly than any other disability group being served in our schools. Just as the "general practitioner" in service provision needs a compendium of information to assist in initiating services, so may the service provider working with learning disabled students benefit from the experience and accumulated knowledge of those already in the field. It is recommended that those individuals actively involved in service provision to learning disabled students in higher education take the time and energy to share their experiences with fellow service providers. Reports of techniques that did not work may

be equally as helpful as reports of successful methodology. It is necessary that service providers receive a more complete picture of the "state of the art" in support services for learning disabled students. We can't know where we are going until we know where we are!

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Faculty Inservice Training: Impact on the Postsecondary Climate for Learning Disabled Students

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ABSTRACT

Research was conducted to measure the effect of faculty inservice training on university faculty attitudes toward, and knowledge about, learning disabilities. Faculty in the experimental group received several inservice training sessions over a 9-month period. Based on a pre-post test measure, faculty knowledge scores significantly improved as a result of inservice training over time and attitudes remained stable. For faculty in the control group, lack of training had no impact on knowledge scores, but did result in a significant decline in attitude scores. Multiple inservice sessions over time were effective in improving faculty members' knowledge about learning disabilities and maintaining positive attitudes toward LD students.

Increasing numbers of handicapped students have enrolled in postsecondary education. Section 504 of the Rehabilitation Act of 1973 requires that an institution make modifications to accommodate handicapped individuals, if needed, to ensure that otherwise qualified handicapped students are not discriminated against. Although Section 504 has ensured access to higher education, Hawthorne (1977) and Walker (1980) have pointed out that attitudinal barriers and organizational structures within the institution may impede the attainment of handicapped students' educational goals. These restrictions may flourish because educators have had limited opportunities to learn about the educational implications of specific handicapping conditions. The passage of federal guidelines to protect the rights of handicapped students does little to increase knowledge or to encourage positive attitudes among postsecondary educators.

A survey by Marion and Iovacchini (1983) was sent to 408 public and private institutions of higher education from all sections of the country. A total of 155 (38%) responded. All responding institutions indicated that a 504 compliance officer had been appointed on their campuses to ensure the rights of handicapped students. The survey revealed that more than 70% of the 504 officers spent 10% or less of their time serving as compliance officer. Respondents also reported that their institutions provided some type or a variety of support services to enrolled handicapped students; the availability of support services is one element frequently cited as an indication of the accessibility of postsecondary education for handicapped students.

Even though it appears that support services are generally available to handicapped students, there is little evidence that faculty received guidance that would lead to the advantageous use of those services. The professional preparation and experiences of individuals in higher education typically relate to specific content areas of expertise. Faculty members have had limited access to information about handicapping conditions (Shaw & Norlander, 1986) and relatively few direct interactions in educational settings with handicapped individuals that would contribute to their overall knowledge about and positive attitudes towards persons with disabilities.

It also is likely that, even if faculty have received information on handicapped students, their interaction with those students might still not be positive. Because the interactons between students, in general, and faculty are accepted as tantamount to learning (Freedman, 1973), it is assumed that the interactions between handicapped students and faculty are equally important in the learning process. While the identification of specific components that contribute to successful teacher/student interactions continues to be a topic of research among educators, it is generally accepted that the quality of interaction is a composite of attitudes and expectations of the participants. It is evident from studies of the general population that the attitudes and expectations evoked in nonhandicapped persons during interactions with handicapped individuals frequently are negative (Ayer, 1970; Barker, Wright, Meyerson, & Gonich, 1953: Kang & Masoodi, 1977; Larsen, 1975; Yuker, Block, & Younng, 1970). Nonhandicapped people often have feelings of pity, fear, or revulsion when relating to handicapped people. These findings from the general population strongly suggest that higher education faculty members may find it difficult to maintain neutral attitudes when interacting with handicapped students.

There are few studies that have investigated faculty attitudes toward handicapped students. Most reports are limited to faculty reactions to or perceptions of physically and sensory impaired individuals (Fonosh & Schwab, 1981; Newman, 1976; Walker, 1980). Nathanson (1983) found that even when faculty are perceived by handicapped students to have positive attitudes and behaviors toward physically disabled students, those faculty report feelings of pity and fear of the handicapped students. It is not known whether faculty attitudes toward students with a hidden handicap, such as a learning disability, are similar to their attitudes toward students who have obvious handicaps. Walker (1980), in reviewing the findings from Wright (1960), suggests that faculty may be inclined to reject learning disabled (LD) students because the learning disability represents a loss of learning ability or a perceived sense of decreased intelligence; learning ability and intelligence are two attributes most valued by individuals who choose academia as a career.

Because the number of LD students attending postsecondary institutions is increasing more rapidly than any other categorical group of handicapped students (Hartman & Kruhlwich, 1984), and because information about attitudes and knowledge relative to LD students is limited, efforts to clarify issues have been initiated. The Postsecondary Intervention Model for Learning Disabilities, University of Nebraska, supported by funds from the U.S. Depatment of Education, was initiated to identify and provide services to learning disabled students and to design and implement faculty development activities. In preparing to carry out these activities, personnel associated with the project surveyed 717 faculty and student services personnel using a questionnaire designed to measure attitudes and knowledge (Aksamit, Morris, & Leuenberger, 1987).

Responses to the questionnaire indicated that access to information about learning disabilities and previous interactions or experience with LD students were significantly related to faculty members' knowledge base and positive attitudes toward those students. Apparently, if faculty have information, they develop more accurate expectations about interactions and thus can establish more positive attitudes. Findings from the earlier study were used to design faculty development activities that would produce a positive shift in attitudes toward and knowledge about learning disabled students enrolled at the university.

This article describes the design, implementation, and outcome of faculty development activities in a postsecondary setting. The investigators addressed this question: Does participation in specific faculty inservice training influence college faculty members' attitudes toward, and knowledge about, students with learning disabilities?

PARTICIPANTS AND INSTRUMENT

Eighty faculty members were randomly selected from subjects in an earlier study (Aksamit et al., 1987) that measured the knowledge and attitudes of college faculty and student services staff toward LD students. Participants were divided into two groups of 40 each. The experimental group received specified inservice training on learning disabilities; the control group did not.

The questionnaire developed for the previous study was administered to experimental and control groups as a posttest following the intervention. Data sets were available from 54 of the 80 randomly selected subjects. Thirty participants in the experimental group and 24 in the control group completed both pre- and posttest measures. The Attitude and Knowledge Subscales were composed of 11 items each and were validated by factor analysis procedures. Respondents used a 6-point Likert-type rating scale (1 = strongly agree to 6 = strongly disagree) to report attitudes and knowledge. Internal reliability of the instrument had been established earlier using the Cronbach Alpha Reliability Coefficient. Reliability coefficients of .82 for the Knowledge Subscale and .86 for the Attitude Subscale were obtained.

INTERVENTION PROCEDURES

All 54 participants completed the questionnaire as a pretest measure in February, 1985, and again as a posttest measure in April, 1986. In September, 1985, members of both groups received a single mailing of printed material that provided limited information about learning disabilities and described the university's grant-supported services for LD college students. Intervention procedures for the experimental group were conducted from September, 1985, through May, 1986.

All experimental group participants had two or more personal contacts with professionals specializing in learning disabilities over the two-semester period. The inservice sessions were tailored to meet the individual needs of faculty members and consisted of small group presentations and discussions, phone consultations, or printed materials. Small group activities were designed to provide general information and to respond to specific questions about LD students. Printed materials consisted of brochures, letters introducing the LD student to the faculty member, or faculty-student contracts used to specify the terms for modified assignments and exams. While small group inservice sessions were general in nature, phone consultations and printed materials more frequently provided information in response to specific faculty questions about learning disabled students in their classes. Information about a student's learning style, possible strategies for adapting course content and requirements, and suggestions for teaching methods were the most frequent topics for individualized inservice training. During the verbal consultations, emphasis was placed on the LD students' learning strengths and potential for successfully pursuing a college education. All inservice materials and activities were designed to increase the faculty members' information about LD students with the intent of decreasing their discomfort and fostering positive interactions with LD college students.

DATA ANALYSIS

Group (specified faculty inservice training and no specified faculty inservice training) and time (pretest measure in 1985, and postmeasure in 1986) were the independent variables. The Attitudes and Knowledge Subscales of the questionnaire served as dependent variables. The following data analyses were completed: (a) descriptive statistics for the Attitude/Knowledge Subscales, and (b) two univariate, two-way analyses of variance for the time and group variables with simple main effect follow-ups.

RESULTS

The results are presented separately for the Attitude and Knowledge Subscales. Only interaction effects between the independent variables and findings from the simple main effect follow-ups are reported.

Knowledge

Table 1 presents pre- and posttest knowledge means with standard deviations for experimental and control groups. Table 2 provides ANOVA results and reveals a significant interaction effect for the independent variables of time and group ($F = 4.65$; $p = < .05$). Simple main effect follow-ups for time yield no significant differences on pretest means for the two groups ($F = .102$; $p > .05$). However, there is a significant difference between the posttest scores of the two

Table 1
Knowledge Scores

Group	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD
Experimental $N = 30$	36.80	10.21	42.67	6.23
Control $N = 24$	36.21	8.13	36.24	9.24

Table 2
Results of Two-Way ANOVA for Knowledge by Time and Group

Effect	df	F-value	Significance
Interaction Effect			
Time × Group	1	4.65	.0357*
Simple Main Effect Follow-ups			
Time			
pre- × group	1	.102	.8181
post- × group	1	11.327	.0026*
Group			
experimental (inservice) × time	1	11.352	.0046*
control (no inservice) × time	1	.011	.9140

*$p < .05$

groups, with experimental subjects scoring significantly higher (F = 11.352; $p < .05$). Follow-up analyses for group scores show a significant gain in knowledge scores from pre- to posttest for the experimental subjects (F = 11.327; $p < .05$), but no significant gain in scores for the control group (F = .011; $p < .05$).

Attitudes

Table 3 presents the pre- and posttest attitude means with standard deviations for the experimental and control groups. The ANOVA results are shown in Table 4. There is significant interaction effect for time and group (F = 4.59; $p < .05$). Simple main effect follow-up reveals no significant differences between the groups on the pretest measure or the posttest measure (pre = F = 2.34, $p > .05$; post = F = 2.33, $p > .05$). Participants who received inservice training over time show no significant differences in their attitude scores on pre- and posttests (F = .077; $p > .05$). There is, however, a significant change in the pre- and posttest scores for the control group (F = 6.901; $p < .05$) that represents a decline in their attitude scores.

DISCUSSIONS AND IMPLICATIONS

This study found a significant relationship between faculty attitudes toward and knowledge about learning disabilities and the inservice activities delivered over

Table 3
Attitude Scores

	Pretest		Posttest	
Group	**Mean**	**SD**	**Mean**	**SD**
Experimental $N = 30$	45.97	8.97	46.40	5.83
Control $N = 24$	48.50	6.30	43.92	9.13

Table 4
Results of Two-Way ANOVA for Attitude by Time and Group

Effect	df	F-value	Significance
Interaction Effect			
Time × Group	1	4.59	.0368*
Simple Main Effect Follow-ups			
Time			
pre- × group	1	2.34	.2471
post- × group	1	2.33	.2305
Group			
experimental (inservice) × time	1	.077	.7209
control (no service) × time		6.901	.0436*

$^*p < .05$

a 9-month time span. Three findings are relevant to the continued study of faculty inservice training as it relates to LD students. These findings are:

1. Inservice training is effective for increasing faculty knowledge about learning disabilities.
2. Without inservice training, faculty attitudes become significantly less positive.
3. Multiple inservice contacts over time are necessary to have an impact on faculty attitudes and knowledge.

The first finding, that inservice training increased the knowledge of faculty members, is consistent with previous research. Aksamit et al. (1987) have reported that information about learning disabilities is significantly related to more positive faculty attitude and knowledge scores. The direct relationship between knowledge and the dissemination of information through planned inservice training seems logical; if information is provided, one's knowledge of a topic is likely to increase. However, the effect of information on attitudes is more complex. As the second finding indicates, inservice training does not significantly improve faculty attitudes; yet, in the absence of training, faculty attitudes declined significantly.

These results suggest that attitudes are more resistant to change than knowledge. While there is a proportionate increase in knowledge as information is provided, the same effect for attitude is not evident. The attitude scores of faculty members who received information remained stable, while attitude scores of those who did not receive information declined. One explanation for the significant decline in attitude scores when inservice training was not provided may be related to what Perry (1970) described as a general pattern of adjustment to novel experiences. In this instance, the novel experience would be having an LD student in class. Perry suggested that adjustment to new situations generally involves recognizing aspects within the new experience that are consistent with previously held attitudes. One might speculate that faculty who discover they are teaching students with learning disabilities for the first time are likely to categorize aspects of LD student behavior in a manner consistent with previously experienced student-teacher interactions. If, for example, an LD student requests additional time to take an exam or complete an assignment, the faculty member may perceive this as an indication of inadequate preparation. That observation could be consistent with previous teaching experience. In contrast, faculty members who have received accurate information about learning disabilities may be better able to recognize the LD student request as an appropriate accommodation. The faculty member's ability to distinguish accurately between the charactertistics of LD students and students who are inadequately prepared allows him or her to adjust beliefs to accommodate the new experience. Even though the faculty members who received inservice training did not significantly increase their attitude scores, the information about learning disabilities may have facilitated their ability to "neutralize" the effect of novel experiences, thereby maintaining positive attitudes toward this "different" student. The control group, without benefit of new information, had fewer resources for understanding and accepting the new experience (teaching LD students) and may have associated the LD student differences with negative student attributes, which was reflected in decreased attitude scores.

Using Perry's (1970) novel experience as an explanation for the decline in attitude scores when no inservice training is provided is speculative; other factors might have influenced the finding. Other authors also have attempted to describe the relationship betwen attitudes and information. Donaldson (1980) has suggested that negative perceptions or attitudes about individuals with differences or handicaps are likely to persist if structured positive experiences do not intervene. The provision of information through inservice training can be one type of positive intervention. However, in this study, information alone apparently was not sufficient for producing positive changes in attitudes. This finding is consistent with Anthony's (1972) report that information alone will not greatly increase attitudes but can significantly increase knowledge when reinforced by positive interactions with handicapped students. Thus, in the present study, the assumption is that positive interactions with LD students occurred as faculty received inservice training and became more adept in teaching these students.

The third finding, which reveals an interaction between inservice training and time, is of major importance for the planning and delivery of faculty inservice training on LD college students. Apparently, faculty members need more than a one-shot information session in order to significantly increase their knowledge base and maintain positive attitudes. The need for multiple inservice contacts over time may be due in part to the complex nature of learning disabilities. Because learning disabilities manifest themselves in a variety of ways, each LD student may require a different type of curriculum modification and teaching adjustment. The faculty member must be skilled in knowing which student would benefit most from a specific accommodation. Another aspect of learning disabilities that makes the faculty member's job more difficult is the notion that learning disabilities are hidden handicaps. The need for special classroom adaptation is not visible. When a faculty member interacts with a student who is visually impaired or is in a wheelchair, he or she recognizes that some adjustment in teaching, curriculum presentation, or student evaluation may be warranted. But because LD students do not appear handicapped, it may be difficult for the typical faculty member to recognize the need for teaching adjustments. Considering these factors, it is understandable that multiple inservice experiences over time are necessary to provide sufficient information about the complex nature of learning disabilities.

This study, while limited in generalizability due to the small sample size, provides encouraging evidence that multiple planned inservice sessions over time can positively influence the knowledge of and attitudes of higher education faculty members toward learning disabled students. The intervention included both general and individualized information about learrning disabilities. Small group sessions, individual phone consultations, printed materials, and written communications were used in various combinations to increase knowledge and affect attitudes. There was no attempt in this study to control for the effect of different types of inservice activites or the presence of an LD student in a classroom. Investigations controlling for these variables would expand the current level of understanding among professionals who hope to provide productive learning environments for LD college students.

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Writing, Technology, and Liberation

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In today's society, the written word is the primary form of long-term communication for both formal and informal uses. In education, the workplace, and at home we must write to succeed. Whether paying bills, recording recipes, completing job applications, or creating memos, term papers, and reports, the person with limited writing skills is at a severe disadvantage. Regardless of a person's verbal skills or creativity, he or she must adhere to the formal structure of written language to be competitive. In the classroom and workplace, both formal composition skills and clear handwriting are considered prerequisites for success. Thus, creative people, regardless of their verbal skills, find that they need written language for success. Writing disabled individuals (people unable to write by hand effectively)—whether their limitation is due to physical disability or learning disability such as dysgraphia—will often find that their competitiveness in the workplace is reduced by their inability to use paper and pencil.

As a writing-impaired student and adult, I found that more of my time and energy went into devising strategies to avoid writing than into expressing my concepts. The most difficult part of writing, the metamorphosis from concept to first draft, transferring ideas from mind to paper, was too often insurmountable for my own dysgraphia. My own writing, looking like the tracks of a mortally wounded chicken, staggers across the page, filled with misspellings, reversals, inverted phrases, and other visible displays of learning disability.

Inability to keep the flow of ideas in step with the spasms of the pencil point also limits the time spent in both prewriting and writing. Before word processors became popular, LD writers having organizational and sequencing problems found prewriting, writing, and all necessary rewriting frustrating to the point of tears. If through good luck any text got to the paper spelling errors, reversals, and structural flaws lay in wait, saboteurs lurking to mutilate future drafts.

Living with this process over time, many LD writers slowly develop a resistance to trying, as the expectation of failure at some level in the process builds. The expectation of success dips from probable to impossible, while poor to minimal handwriting limits writing time, and fatigue and frustration combine to move the paper to the wastebasket.

Luckily, technology has provided alternate ways for nonwriters to write. Low technology writing aids can reduce the physical stress of writing for those with fine motor control problems. For example, fine-point mechanical pencils can reduce fatigue, producing neater handwriting, while the use of ball or felt-tip markers may ease problems caused by unsteady hands. There is a wide variety of handwriting aids for those people who have sufficient coordination to write once they can control the problems associated with grip and fine movement. The trianqular plastic pencil grip is one example. Another, taken from occupational therapists, is using a foam or "NERF" ball with a pencil thrust through it. The strip labeler and plain old typewriter have always been the standbys of the minimal writing crowd. The tape recorder is a standard prewriting device for some auditory processors who otherwise write. Both mechanical and emergent high technology have provided alternate ways to produce print on paper. Consistent letter formation (one of the major hurdles for the dysgraphic) is overcome via the keyboard, which insures perfect letter formation every time. Of course, the combination of dysgraphic writer and keyboard can simply produce perfectly formed and totally unreadable papers, due to spelling and structural errors. The frustrations of the editing process, often a struggle for non-LD writers, can be insurmountable for LD writers, who are often not able to detect their own grammatical, spelling, or structural errors.

Use of electronic storage on disk or in other electronic memory along with spell checking software (Word Plus, TurboLightning) and grammar review programs (Grammertek II, Writers Workbench) can help LD writers to write and clean up multiple drafts. While both LD writers and their nondisabled peers must learn to edit their own writing, *for the LD writer, access to external editing is essential.* Lower-key high tech, such as battery-operated portable typewriters/printers for letters, labels, and memos when away from the word processor, can be a boon for casual writing. The "smart" typewriters with pages of memory and "real-time" spell checking appeal to a wide market that includes the LD writer.

The torrent of paper needed to feed our work environment limits the ability of dysgraphics to compete with their writing peers. Both the educational and work environments demand constant written output in many forms. Most workers above the entry level are involved in producing reports, memos, working papers, or other documents demanding creativity and the ability to transfer it to paper. At the entry level as well as above, accountability demands record-keeping skills. All too often, these skills involve paper and pencil, so writing-limited people must find a way to provide the workplace with clear hard copy of written materials if they are to compete successfully. The workplace's insatiable demand for paper creates a situation where career choice and scope are limited by writing abilities and skill. Skill, creativity, and willingness to work all become subordinate to the movement of pencil over paper. With technology available to free the nonwriter from the drudgery of penmanship, it becomes a force for liberation.

One of the several critical factors that limit the LD writer's use of this liberating technology is an overall lack of information about technology. Although the folklore of learning disabilities has supported the use of high technology for several years and a review of ACLD papers presented recently supports the folk wisdom, knowledge of liberation technology has not penetrated the vast LD market. In addition, access to liberation technology is currently limited to two main groups within the writing-oppressed population: knowledgeable LD adults (self-taught or educated by a hacker friend or spouse) and the primary school LD child lucky enough to be in a school district that is able to provide technology in the classroom. Given general computer illiteracy in the community, school, and workplace, coupled with a lack of computer access for special education students in the schools, too often the computer is reserved as a reward for the "high achievers" and denied to those it could liberate. At the adult education level, the computer is often seen as a tool for drill and remediation, as a labor-saving device for the instructor rather than liberation or compensation for the LD student.

Computerphobia also contributes to problems. Many of the LD adults in need of computer-assisted writing are so intimidated by the mystique of the machine that they are not able to muster the courage to try. Too many LD individuals have had their self-confidence eroded and do not dare risk possible failure with high tech learning. The few who are either willing or desperate enough to try are further oppressed by the prohibitive costs involved in obtaining equipment.

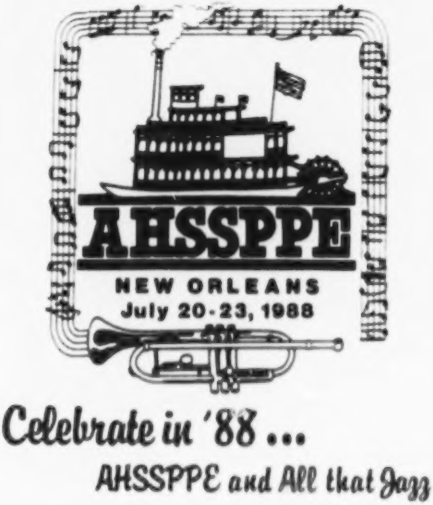
Although the high cost of new systems is beginning to decline, the $500 to $2500 initial outlay for hardware and software to start using a word processor may make liberation unaffordable. In addition, the rapid changes and incredible diversity in hardware and software make the purchase of a computer a venture in immediate obsolescence. For those with severe writing impairments, having to make the choice between a machine for the workplace or home raises both cost and compatibility problems that new users generally do not have the background to resolve.

The few LD adults sponsored by vocational rehabilitation, thus having potential access to a funding source, will find their rehabilitation counselors unaware of the potential benefits of applying liberation technology to their LD caseload. In the rare case where the counselor does see the benefits, the agency may not be able to purchase the appropriate technology due to admnistrative deadlocks.

When LD writers become ready to begin their liberation from pencil and paper, they may still face obstacles. Even when resolve and funding combine to permit change, locating equipment that is appropriate for their needs is often difficult. Writing technology that is user friendly right out of the box is often difficult to obtain. System set-up and user training programs that take special learning needs into account are almost impossible to find, further limiting access to liberation technology.

The LD community is slowly coming to realize that there are great benefits to the use of technology that allows equal competitiveness for the writing handicapped. Students at the LD College Writers project in Minnesota and those enrolled at the Forman School MacIntosh Writing Lab are becoming acculturated to the use of technology for freedom to create legibly. Other LD adults use Canon personal printers or keep typewriters at their desks, in their kitchens, or in their bedrooms to write freely. All are learning to use appropriate technology to achieve liberation from disability and attain competitive access to the world.

LD adults are poised at the start of a lifelong revolution. As they begin to understand the benefits of having access to technology and being able to use it to create the circumstances that will allow them to use their knowledge in their own behalf, they will liberate themselves from the shackles of pen and ink, freeing their creativity, and joining the competitive workforce. The incredible potential of liberation technology is as yet unrealized. Now is the time for the entire LD community, consumers, their families, and professionals to make the effort to access liberation technology for the benefit of all learning disabled individuals.



on campus reporter

Job Clubs for 2-Year College Students with Disabilities

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Finding a job is a critical effort in most Americans' lives. Most people find it stressful; "selling themselves" does not come naturally. For 2-year-college students with disabilities, that stress is often exacerbated. They fear—sometimes correctly—that employers will discriminate against them. They do not know when or how to discuss their disability with employers. Some students with disabilities may never have looked for a "real" job before and do not know the best (or even appropriate) approaches and resources. In addition, social awkwardness that sometimes accompanies students' disabilities can add to the low self-esteem that plagues many job seekers.

Over the past 2 years, the National Center for Research in Vocational Education has operated two studies to determine whether job clubs can help college students with disabilities improve their job-seeking knowledge and skills and savvy about the world of work.

Job clubs have been used since the early 1970s to help all kinds of people, including persons with disabilities, overcome the barriers to finding work (Azrin, 1978; Azrin & Philip, 1979).

> The Job Club Method, as its name implies, is more than the activity of an individual; it is the activity of an individual as part of a group of fellow job seekers, working together under the instruction and encouragement of a leader who provides support, information, facilities, and supplies. (Azrin & Besalel, 1980, pp. 2-3)

A job club coordinator provides training and counseling in job-seeking skills and knowledge, but the distinguishing characteristic of a good job club is its group process and peer support. All of the participants are in the same boat. They get to know each other. In an ideal job club, they work together to help each other define their occupational and job goals, learn to fill out job applications, and decide what to put on their resumés. They constructively critique each other's mock interview performance. When they go out to company personnel offices or network with friends and relatives to find job openings, they not only look for themselves, they also look for their fellow job club members. And when members fail to get jobs for which they apply and interview, the other members help them maintain their self-esteem and perseverance in the search.

The first of the National Center's two studies (Faddis & Long, 1986) pilot tested the job club concept for students with a spectrum of disabilities. Three

2-year colleges served as demonstration sites: Chicago City-Wide Colleges; Columbus State Community College (formerly Columbus Technical Institute) in Columbus, Ohio; and the Community College of Rhode Island, in Warwick.

The second study (Faddis, Long, & Ehrsten, 1987) applied the job club concept to college students with learning disabilities, exclusively. Six 2-year colleges served as demonstration sites: Columbus State Community College, once again; Cuesta College, San Luis Obispo, California; William Rainey Harper Community College, Palatine, Illinois; Northern Virginia Community College, Alexandria, Virginia; Pima Community College, Tucson, Arizona; and Queensborough Community College, Bayside, New York.

National Center project staff developed a model (see Figure 1) for organizing, operating, and evaluating a job club for college students with disabilities. Staff also modified or developed other materials, including a syllabus of suggested job club meeting activities, handouts, annotated bibliographies of relevant publications, and lists of pertinent resource organizations.

For each of the two studies, project staff conducted an orientation workshop for site representatives and shared with them the overall concept, objectives, and job club materials. The representatives then adapted and implemented the model and materials at their individual colleges for appropriate groups of students.

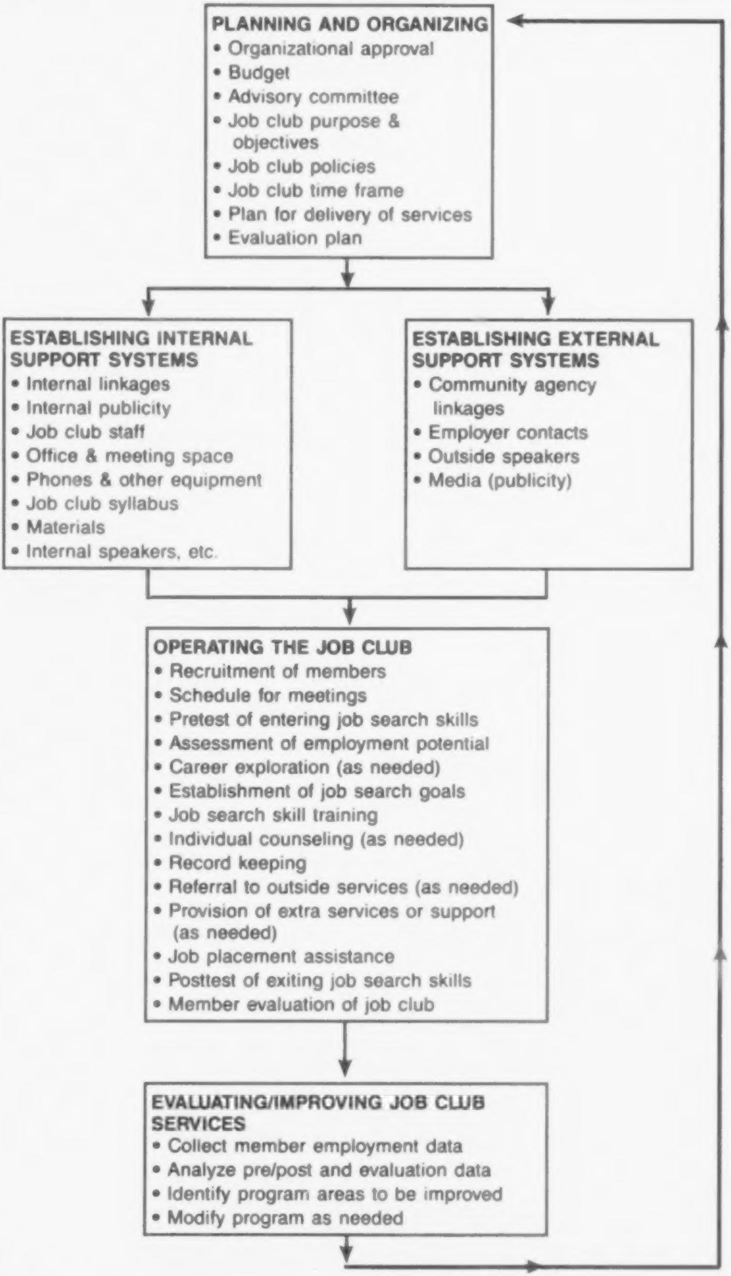
The National Center's approach to operating the job clubs aimed to minimize both the time commitment and costs to the colleges while extending the club's effectiveness as much as possible. A key to these goals was the establishment of both internal and external support links to assist with important elements of the job clubs. For example, internal links with the college's office of disabled student services, developmental education department, and the like alerted both students and faculty to the availability of the job club and aided in recruitment. At some sites, college placement officers talked to and helped the participants learn how to fill out job applications, develop resumés, and make effective use of the college's placement services to locate job openings.

Links with outside agencies, such as state departments of rehabilitation, employment services, and so forth, provided guest speakers to talk to the participants about traditional and alternative job search avenues. Interested local employers sent speakers to discuss employer expectations, and some employers actually conducted mock interviews with participants. One of the most effective external links was with peer speakers—successfully employed graduates of the college who had disabilities and could talk about their experiences and inspire the club members.

Job club coordinators followed the syllabus of suggested activities fairly closely. These activities included the following:

- Introducing the job club's purpose and objectives
- Identifying members' skills and interests and matching those to job titles
- Clarifying the members' specific job-search goals
- Using want ads, other public information resources, personal networking, and the hidden job market to locate job openings

Figure 1. Process model of the job club



PLANNING AND ORGANIZING
- Organizational approval
- Budget
- Advisory committee
- Job club purpose & objectives
- Job club policies
- Job club time frame
- Plan for delivery of services
- Evaluation plan

ESTABLISHING INTERNAL SUPPORT SYSTEMS
- Internal linkages
- Internal publicity
- Job club staff
- Office & meeting space
- Phones & other equipment
- Job club syllabus
- Materials
- Internal speakers, etc.

ESTABLISHING EXTERNAL SUPPORT SYSTEMS
- Community agency linkages
- Employer contacts
- Outside speakers
- Media (publicity)

OPERATING THE JOB CLUB
- Recruitment of members
- Schedule for meetings
- Pretest of entering job search skills
- Assessment of employment potential
- Career exploration (as needed)
- Establishment of job search goals
- Job search skill training
- Individual counseling (as needed)
- Record keeping
- Referral to outside services (as needed)
- Provision of extra services or support (as needed)
- Job placement assistance
- Posttest of exiting job search skills
- Member evaluation of job club

EVALUATING/IMPROVING JOB CLUB SERVICES
- Collect member employment data
- Analyze pre/post and evaluation data
- Identify program areas to be improved
- Modify program as needed

- Using appropriate approaches when inquiring at companies about job openings (may include phone skills)
- Filling out job applications
- Maintaining self-confidence, self-esteem, and perseverance through positive attitudes
- Drafting and polishing a resumé
- Developing cover letters, thank you letters, and so forth
- Keeping track of job contacts
- Dressing for success
- Developing good job interviewing skills (may include use of mock interviews, preferably videotaped for later review by the members)
- Discussing disability with employers
- Understanding legal rights as a job applicant and worker
- Understanding how to keep a job once you get it

Job clubs in the first study (of students with a variety of disabilities) met once or twice a week over an average of 12 weeks. Most meetings lasted 1 to 1½ hours. Job clubs in the second study (students with learning disabilities only) met once or twice a week over an average of about 10 weeks. Most meetings lasted 1 hour.

For each study, National Center project staff developed pre- and posttests to assess changes in the levels of job-seeking skills and knowledge that could be attributed to participation in the job club activities. Coordinators at the sites administered these instruments. National Center staff also visited each site at about the midpoint of club activities to observe a meeting in operation, interview the coordinators, and gather other pertinent information. In the second study, project staff also conducted a case study interview at each site with a randomly chosen participant.

About 6 to 8 weeks after the last meeting, each site conducted a follow-up of job club completers to collect employment data and participant feedback. National Center staff then compiled and analyzed the data, derived findings, and assessed the value of the outcomes for future practice.

The overall findings are promising. Both studies found that participation in a job club increases the members' job-seeking skills and knowledge and world-of-work savvy. These skills and understandings not only help them find jobs, but also will enable them to conduct successful job searches when they need to do so in the future.

Employment outcomes from the first study, which included students with a wide range of disabilities, were very positive. Members tended to find better jobs (with higher salaries and better benefits) than they would have found if they conducted their job searches without the support and information available through the job club. They also tended to find these jobs faster than they would have otherwise.

Employment outcomes of the second study, which concentrated solely on students with learning disabilities, were less encouraging. Employment rates were relatively low, and jobs obtained seemed no better than students might have gotten without job club participation. Project findings suggest that the students with learning disabilities may have done better if job club activities had extended beyond the short 10-week period allotted. These students require more time, more instructional accommodation, and more individualized encouragement and support to derive maximum benefit from job club participation.

Although further, rigorous research will be needed to refine the job club approach and confirm its efficacy for these populations, a job club for students *with a mix of disabilities* appears to be a practical vehicle for 2-year colleges to serve this hard-to-place student population. To facilitate the use of job clubs by offices of disabled student services, the National Center is currently in the process of developing a handbook based on the experiences and insights gained during the two studies.

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Learning Disability College Programming: A Bibliography

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ABSTRACT

A growing body of literature on issues related to postsecondary programming for the learning disabled is now available to service providers. This paper includes a bibliography of more than 160 current references including information on transition, characteristics, diagnosis, social skills, vocational preparation, program effectiveness, and program evaluation.

Postsecondary programming for the learning disabled is growing rapidly. Several studies have indicated that more than half of the 50,000 learning disabled students graduating from high school each year will go on to some form of postsecondary education (Mithaug, Horiuchi, & Fanning, 1985; *Ninth Annual Report*, 1987; White et al., 1982). This assures that the momentum from the ten-fold increase in learning disabled college freshmen that occurred during the last decade will continue into the 1990s (*Learning Disability Update*, 1986). When one considers the current development of noncollege postsecondary training options in vocational and social skills (Neault, in press), as well as program development at prestigious universities such as Dartmouth and Harvard, the continuum of service options for students with learning disabilities is expanding beyond all previous expectations.

In spite of the rapid development in this field, there is little agreement and there are even less data regarding the appropriateness of various program models, the utility of different approaches to diagnosis, and the effectiveness of instructional techniques. This lack of consistency in LD postsecondary program development may be attributed to the divergent backgrounds and training of support staff. Personnel from an array of professional fields are involved in developing postsecondary learning disabilities programs. Special educators, counselors, higher education administrators, social workers, psychologists, speech pathologists, and remedial educators typically have been given primary responsibility for this area. Blosser (1984) and Shaw and Norlander (1986) have raised concerns about the limited experience and training of many of those who implement these programs.

There is clearly an informational deficiency regarding the implementation of postsecondary learning disabilities programs. However, as Susan Vogel noted in introducing a panel at the most recent AHSSPPE conference, the kind of research now available was not even a possibility just a few short years ago.

A number of universities, including Connecticut, Nebraska, Northern Illinois, and Penn State, have major postsecondary learning disabilities research programs underway. Significant research is now being generated concerning the transition from high school to college, adult learning disabilities diagnosis, characteristics of learning disabled college students, social skills of learning disabled adults, effectiveness of academic and social interventions, and program evaluation.

Postsecondary service providers need to be familiar with what has been tried so we don't waste time replicating ineffective models or interventions. We also need to collect data on what we are doing and evaluate our own services so that we can help each other fine-tune our programs. The University of Connecticut is working with AHSSPPE's Learning Disability Special Interest Group to develop such data collection and program evaluation processes. As AHSSPPE members share what they learn, programming efforts for the postsecondary student with learning disabilities will be enhanced on a national scale.

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The Other Minority: Disabled Student Backgrounds and Attitudes Toward their University and its Services

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ABSTRACT

Among disabled students attending colleges of the Washington, D.C., area 100% reported that the main reason they came to their school was that a high school teacher or counselor recommended it; 43% were quite certain of their career goals; 73% reported that they currently use the disabled student services at their campus. Differences by type of disability and implications for faculty and staff are discussed.

The 1970s was the decade in which the disability rights movement surfaced and slowly began to diminish the discriminatory practices that have traditionally prevented handicapped people from entering the mainstream of society. The Rehabilitation Act of 1973 made it illegal for educational institutions that receive federal monies to discriminate against disabled individuals who are otherwise qualified for admittance. This legislation helped to ensure access to higher education for disabled persons. An increasing number of colleges and universities are making progress in reducing and modifying physical facilities and program barriers that restrict disabled students (Torres, 1984).

On college campuses today, both able-bodied and disabled students enter with the expectation that the time and effort they put forth will in some way improve their future quality of life. Although each student's quest for betterment is individualized by aspiration, determination, knowledge, and ability, the goal of living a life of dignity and worth is pervasive. Lifchez and Trier (1979) use the metaphor "half-way house" to explain the university's role in assisting all students in making the transition from youth to maturity, while providing a relatively safe environment. Historically, this has been important for able-bodied students; for disabled students, it is of growing importance. Lifchez and Trier make the following statement about the handicapped student experience: "Seeking escape from a role in society largely determined by their disability, and often from a sheltered, if not shut-in, environment, they search for one in which their contribution, their humanness, becomes primary in the eyes of others" (p. 23).

There are many barriers confronting disabled people. Often the barriers are physical, as in the case of stairs and curbs. But, as noted by Bailey (1979), perhaps the toughest barriers are attitudinal: patronzing sympathy, stereotypes, and myths of ineffectiveness. Bailey further notes that "there is a pervasive sense of 'we vs they,' the most crippling of all stereotypic mind sets" (p. 82).

Studies conducted by Comer and Piliavin (1975) and Weinberg (1976) illustrate that physically disabled people are viewed by able-bodied people as different on the basis of personality traits, moral characteristics, social abilities, and political attitudes. Stovall and Sedlacek (1983) studied differences in reactions of able-bodied students to individuals who were blind and those in wheelchairs. They found that attitudes were negative toward blind people in academic situations (e.g., lab partners) but were most negative toward those in wheelchairs in social situations (e.g., dating). There has been little literature on differences among students with various disabilities.

The purpose of this study was to assess the experiences, attitudes, and perceptions of disabled students toward their university and its services. Particular attention was given to differences among students with various disabilities.

METHOD

Disabled students (58 male and 43 female) attending colleges of the Washington, D.C., area Coalition of Disabled Student Service Providers were given a 53-item questionnaire concerning their attitudes, goals, and perceptions. The questionnaire was designed by the Disabled Student Service and Research Office staff of the Counseling Center at the University of Maryland, College Park. Questions were developed from the literature and from discussions with disabled students. The questionnaire was mailed out by participating universities to disabled students identified through the disabled student offices. A return rate of 75% was obtained by using mail and telephone follow-up. Data were analyzed by chi-square and two-way (disability by sex) multivariate analyses of variance (MANOVA) at the .05 level.

RESULTS

General Characteristics

Students were asked to choose the one best description of their disability. The percentages of students identifying each category were: mobility impaired (not wheelchair users), 25%; deaf, 17%; blind, 12%; sight impaired, 10%; wheelchair—quadriplegic, 7%; wheelchair—paraplegic, 6%; hearing impaired, 5%; learning disabled, 4%; multiply disabled, 3%; and other, 11%. Cause of disability is listed in Table 1. Students reported being disabled an average of 18 years.

Ethnically, 78% identified themselves as white; 15%, as black; 3%, as Hispanic; 3%, as Asian; and 1%, as Native American. In addition, 93% of the respondents were United States citizens.

The mean age reported was 32, with a third reporting their ages as between 18 and 22, and 30% as over 35. Significant age differences were found

Table 1
Cause of Disability

	Percentage		
	Congenital	Illness	Accident
Hearing impaired	80	15	5
Sight impaired	70	10	20
Learning disabled	67	33	0
Deaf	42	47	12
Blind	40	30	30
Multiply disabled	33	67	0
Wheelchair—quadraplegic	14	15	71
Wheelchair—paraplegic	0	33	67

using MANOVA at .05 for sex and disability. Females tended to be older than males. Learning disabled, hearing impaired, and sight impaired students were significantly younger than the other disabled students. Students with multiple disabilities and those who classified themselves as blind and deaf were significantly older than other disabled students.

Student Status

Of all respondents, 57% were full-time students, while deaf, wheelchair—paraplegic, and blind students indicated the highest percentages of part-time attendance (82%, 67%, and 58%, respectively). The class standings of the students were freshman, 10%; sophomore, 11%; junior, 24%; senior, 12%; graduate student, 28%; special student, 10%; continuing education, 1%; and other, 5%. Sixty-five percent of the deaf students, 33% of the multiply-disabled students, and 32% of the mobility impaired students were graduate students. Disabled students reported a mean GPA of 3.1 on a 4-point system.

Living Arrangements and Finances

Disabled students most often lived with a spouse (28%), followed by with parents (25%), alone (22%), and with a roommate (18%). Their median family income was $17,000 per year, with 41% of it coming from self/spouse, 39% from parents, and the rest from other sources.

When asked how the major part of their college expense was being financed, students reported the following: 19%, parental support; 13%, vocational rehabilitation funds; 10%, federal aid; 9%, money earned on part-time and summer jobs; 8%, scholarship; 8%, savings; 4%, veterans benefits; 2%, social security; and 26%, other. At one time or another, 89% have been employed, though only 38% reported being employed presently. Of the deaf students, 94% reported being currently employed, and they made up two-fifths of all employed disabled students. Employed disabled students reported working an average of 26 hours a week; 49% indicated that they work 20 hours or less a week, 37% work 40 hours a week, and 8% work more than 40 hours a week.

Use of Campus Services

The disabled student services at their campus are used by 73% of the students. However, results show that student use varies significantly among disability groups with 100% of the multiply disabled and learning disabled students using services, followed by deaf students, 88%; blind students, 83%; wheelchair—quadriplegic students, 57%; wheelchair—paraplegic students, 50%; and hearing impaired students, 20%.

The greatest reported need of disabled students while in college was for financial assistance, 31%; followed by assistance with disability, 23%; positive social climate, 14%; academic advising, 12%; other, 10%; tutuoring, 7%; and housing, 2%. A higher need for assistance with disabilities was indicated by wheelchair—paraplegic students, 50%; learning disabled students, 50%; multiply disabled students, 33%; and mobility impaired students, 28%.

Disabled students were comfortable in seeking help with an academic problem from a variety of sources. Ninety-six percent would go to their parents for assistance, followed by counseling center, 92%; other students, 89%; disabled students services, 82%; departmental advisor, 82%; faculty member, 78%; and academic advisor, 65%.

Education

A majority (66%) of the disabled students indicated that the last high school they attended was a public school with able-bodied students. Of the rest, 9% indicated that they attended a public high school for disabled students; 8%, a private high school with able-bodied students; another 8%, parochial high schools. Only 5% of all disabled students attended private schools for the disabled, but 24% of the deaf students and 10% of the sight impaired students attended such private schools.

After completing high school, 36% said that they enrolled at their present university, while 40% reported attending another college first. This pattern tended to differ according to disability. Those students coming directly to their present university after high school were the hearing impaired, 80%; learning disabled, 75%; multiply disabled, 67%; and the sight impaired, 60%. The percentage of students who previously attended another college was the highest among deaf, 70%; mobility impaired, 50%; and other, 46%, students. Eight percent of the disabled students said that they went to work after completing high school, while 6% attended a trade or vocational school and 5% served in the military.

The reason students reported most often for attending their present university was that it was suggested to them by a high school teacher or counselor. Friends or relatives who formerly or were presently attending there also influenced the choice. Provisions for disabled students played an important part in the decision to attend for 86% of the disabled students, while the relative inexpensiveness of their education was influential for 82%. Such factors as geographic location and the offering of a designated academic program were important for 55% and 54% of the disabled students, respectively.

When asked about their highest degree aspiration, 32% indicated master's degree; 29%, PhD or EdD; and 25%, bachelor's degree. Smaller percentages of disabled students aspired to obtain advanced degrees in law (4%) and medicine (2%). All the hearing impaired students planned to achieve beyond the bachelors level; 80% indicated aspirations for the masters level and 20%, the doctoral level. Evidence of high educational/vocational aspiration was also indicated by mobility impaired students, with 42% indicating the masters level and 88%, the doctoral level. For deaf students, 29% choose a masters degree and 47% the doctoral degree.

When asked to indicate the most likely reason they would leave their university before obtaining their degree, 21% said due to health-related reasons; 11%, other; 10%, cost to family; and 9%, disinterest in studies. However, 38% reported that they were absolutely sure that they would obtain a degree prior to leaving.

Vocational Goals

Sixteen percent had clearly fixed vocational goals and indicated that they were quite certain of their vocational goal at this time. In contrast, 27% reported being somewhat uncertain, 7% were quite uncertain, and 6% indicated no specific goal at present. Blind students as a group indicated the highest degree of certainty of vocational goals, followed by wheelchair—quadriplegic, learning disabled, and the deaf students.

Students reported that the most important factors in their long-term career choices were intrinsic interest in the field, 26%; working with people, 19%; a well-respected or prestigious occupation, 11%, a great deal of independence, 10%, availability of job openings, 9%; high anticipated earnings, 7%; working with ideas, 5%; and rapid career advancement, 3%. After graduating from college, 53% indicated that they wish to begin a career, while 26% said they plan to go to graduate school, 9% reported that they wish to get married and begin a career, while an additional 12% said "other."

Comfort Level and Adjustment to College

Students were queried about their level of comfort and adjustment to the university milieu (Tables 2 and 3) and their feelings about the university provisions for disabled students (Tables 4 and 5).

Disabled students generally felt comfortable and adjusted in the university environment. Deaf, wheelchair—paraplegic, and wheelchair—quadriplegic students felt significantly more left out of things at the university because of their disability than did other disabled students. Overall, disabled students tended to feel comfortable in social settings where they were the sole disabled person. Women felt more comfortable than men being the only disabled person at a party.

Table 2

*Comfort Level in Social Situations**

Situation	*M*	SD
Asking for assistance from others	2.41	1.23
Discussing your disabilities with students	2.20	1.26
Being at a party	2.61	1.30
Dating	2.39	1.22
Coming into a room where a group of people are already talking	2.55	1.19
Competing for grades against other students in a classroom	2.15	1.29

*Based on 5-point scale where 1 = very comfortable, 5 = very uncomfortable

Table 3

*Adjustment to College**

Response	*M*	SD
It has been difficult for me to adjust to college.	3.72	1.15
Because of my disability, I felt left out of things at my school.	3.47	1.29
Able-bodied students at my college feel superior to me because of my disability.	4.05	1.00
There are many things at my college for disabled students to identify with.	3.15	1.01
Able-bodied students at my college feel uneasy when interfacing with me.	3.46	1.10
As a disabled student, instructors meet my academic needs.	2.43	1.09
Professors and students do not attribute my behavior and abilities to my disability.	2.08	1.07

*Based on 5-point scale where 1 = strongly agree, 5 = strongly disagree.

Table 4

*Evaluation of University Provision for Disabled Students**

Response	*M*	SD
I feel that the disabled student services at my college are helpful with preregistration procedures.	1.86	1.01
My college is trying to eliminate barriers for disabled students.	2.13	1.01
I feel that the disabled student services at my college are helpful with registration procedures.	1.89	.91
I feel that the disabled student services at my college have provided services to insure equal opportunity at the school for students with my disability.	2.09	.98

*Based on 5-point scale where 1 = strongly agree, 5 = strongly disagree.

Table 5
*Evaluation of Services for Disabled Students by Disability**

Satisfaction with Services	*M*	SD
Visually Impaired		
Reader services	2.45	1.28
Writer for test/quizzes	2.15	.90
Assistance in ordering materials from "Recordings for the Blind"	2.16	1.12
Orientation to campus	2.13	1.13
Availability of large print materials	2.78	.67
Classroom note taking	2.55	1.13
Hearing Impaired		
Classroom note taking	2.71	1.16
TDD/amplified telephones	2.00	1.14
Mobility Impaired		
Assignments of classess to accessible locations	1.83	1.01
Assistance with recruitment of personal care attendants	2.58	.90
Neuromuscular Impairment		
Writers for test/quizzes	1.55	.58
Assistance with note taking	1.83	1.30

*Based on 5-point scale where 1 = strongly agree, 5 = strongly disagree.

DISCUSSION

This study sought to examine disabled student backgrounds, attitudes, and perceptions of their campus and its services. Results show that close to three-fourths of disabled students reported using services for disabled students at their campus, and on the whole they were quite satisfied. Disabled student services were primarily used by multiply disabled, learning disabled, deaf, and mobility impaired students.

It is noteworthy that, as a group, disabled students appear to be older than the typical able-bodied college student. Within-group sex differences indicated that female disabled students tend to be older than their male counterparts. Disabled students who were 18 to 22 tended to be those with learning disabilities and sight and hearing impairments. Generally, blind, deaf, and multiply disabled students tended to be older.

Overall, about two-fifths of the disabled students attended school part-time. Also, more than two-thirds of the disabled students aspired to post-graduate degrees.

Interestingly, disabled students indicated a greater need for financial aid than for assistance with their disability while in college. Students requesting more assistance with their disability were those with learning disabilities and wheelchair—paraplegics.

Results indicated that most disabled students usually felt comfortable in situations involving social contact with able-bodied students. As a group, female students appeared to be more comfortable than their male counterparts in social situations.

Disabled students indicated they felt comfortable with their adjustment to the university milieu, felt that their school was trying to eliminate barriers for the disabled, and felt that providers of disabled students services were initiating and maintaining equal opportunities for them.

IMPLICATIONS AND RECOMMENDATIONS

This study shows not only the attitudes, perceptions, experiences, and backgrounds of disabled students from several campuses, but illustrates the important recognition of unique subgroup differences. As we have seen with the term "minority" (Patterson & Sedlacek, 1979), people tend to group all persons with disabilities under one umbrella term. It is important to remember that the attitudes and perceptions of one group of disabled students group cannot be generalized to all disabled students.

Educators, administrators, counselors, and staff should review these findings in order to gain new insights, do away with old stereotypes, and increase sensitivity to varying disabled student characteristics and experiences. With this understanding, university service providers could modify or expand existing programs or develop new ones that incorporate and reflect disabled student needs and experiences. This would not only lead to better service provision, but could assist the transition of disabled students by educating able-bodied students. Stovall and Sedlacek (1983) have recommended orientation programs that inform able-bodied students about disabled students' problems. A further step would be the development and provision of workshops that examine able-bodied students' feelings, fears, and prejudices about disabled people.

There is also a need for more research conducted by student personnel professionals concerning disabled students. Unless we continue to do research, what we do may be influenced more by stereotype than fact.

Disabled people constitute a minority group that includes both sexes and does not discriminate along socioeconomic and racial lines. This group is one in which most of us will hold membership at some point due to accident, illness, or aging. Thus, it should be apparent that in obtaining a better understanding of the disabled student community, we gain a better understanding of ourselves.

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The Association on Handicapped Student Service Programs in Postsecondary Education is a national, nonprofit organization of persons from all fifty states, Canada, and other countries committed to promoting the full participation of individuals with disabilities in college life. Since AHSSPPE began in 1978, its membership has grown to over 500 individuals from more than 350 institutions. The Association has sponsored numerous workshops and conferences that have focused on common problems and solutions in upgrading the quality of services available for handicapped students within postsecondary institutions.

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The *Journal of Postsecondary Education and Disability* welcomes manuscript submissions that are of an innovative nature and relevant to the theory and practice of providing postsecondary support services to students with disabilities. Shorter articles of 500 words or less that are of an opinionated nature, including reviews of professional literature, are also invited.

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A Pilot Project Using Word-Processing for Disabled Students

Colin J. Laine *and* **Frank B.W. Harper,** *University of Western Ontario*

Several studies have shown that written language in college-age learning disabled and hearing-impaired students is often deficient. Language deficiency, especially reading retardation, has also been associated with lower academic self-concept and increased potential for negative emotional reaction. For disabled students in college, this problem can be a significant barrier to success. This project was designed to assess ways in which language-assistive equipment would lead to improvements in the quality of assignments, use of time and facilities, and self-concept.

The University Library Service provided two secure resource rooms and security personnel for key exchange, user check-in, and general security. The Centre for Communicative and Cognitive Disabilities provided two sets of electronic typewriters with spelling checkers coupled to word-processing units. These were chosen over microcomputers for ease of access and flexibility of use.

The students were advised of the project in a workshop that introduced them to the capabilities of the equipment and addressed their questions and concerns. Of the 67 registered disabled students on campus, 15 participated. The equipment use was monitored daily by the library staff and the students. Minor problems were encountered, including use of equipment by nondisabled

This project was made possible through a grant from the Canadian Secretary of State. The authors also wish to acknowledge the considerable contribution made by the Counsellor for Disabled Students and by the University Library Service, University of Western Ontario.

students, questions of location and nature of equipment, leaving equipment on overnight, and excessive time taken by some students. Regular meetings with the counsellor for disabled students resolved the issues and a 2-hour time-limit for uninterrupted use was set. At the end of the 12-week term, the participants were surveyed on their use of the equipment. Security sign-in sheets assessed access time.

The equipment was in use for an average of 63.25 hours per week (one student spent over 200 hours during the term). The surveys indicated that the majority of the users were learning disabled students. The learning disabled students had been the most vocal proponents of the facility and were the strongest self-advocates on campus. None of the mobility impaired students used the resource even though the rooms were fully accessible. These students felt that the location was "inconvenient" and "too far from residence"; further, only one mobility impaired student had tactile problems that would have benefitted from use of the equipment. Several improvements were noted over the 3 months. Ten students (77%) reported an improved quality in their work; eight (61%) reported better use was made of their time; five (39%) reported improved grades. An important supplementary observation was their increased use of the library generally.

Although the equipment was demonstrated and came with built-in tutoring, half the students sought some extra assistance in their work. They agreed, however, that the equipment was readily accessible despite their disabilities. The equipment withstood the considerable amount of use and a variety of users without any breakdown. The students treated the resource rooms and the equipment very personally and with a high degree of responsibility. The experience raised their confidence and morale. A major outcome of this project was the degree of mutual support and assistance the students gave one another. Sharing time, advising one another on assignments, friendship formation, and increased awareness of other students' problems became the norm for this group.

The significance of the relationship between the use of the equipment, the establishment of the resource rooms, and the use of library staff needs further investigation. The project was set up so as to avoid placing extra responsibility on library staff. There were, however, only 15 students in this pilot project. The next stage, a full academic year, is expected to draw many more disabled students to these resource rooms, which now contain a greater variety of equipment. Although reports from library staff indicate the increase was negligible, there are important implications for the library as disabled students become more aware of, and use, library facilities.

It will be important to observe whether outcomes from this project are generalizable to a larger segment of this population. Further, collecting grades over one or more academic periods and using a repeated measures design should establish a relationship between experience with electronic word-processing and academic improvement. Until that time, the subjective reports of the students are encouraging. If there is a cycle of language deficiency, failure, and reduced self-concept, then breaking into the cycle with this technology should lead to greater success. Only controlled longitudinal studies will prove this assumption.

Computers for Disabled Students: Recommendations for Modification of Computer Facilities

Betty A.S. Keddy, *Teachers College, Columbia University*

Many disabled students, particularly those with visual or orthopedic handicaps, are unable to use computer facilities without adaptive devices or special modifications. To develop a plan for improving access to computers by disabled students at one college, a needs assessment was conducted and alternative computer equipment and facility modifications were explored. Recommendations were generated for (a) adapting Apple and IBM microcomputers and a DEC mainframe computer, (b) modifying the computer facilities to permit ease of access, and (c) financial, purchase, maintenance, and computer staff issues.

Computers are commonly found on many of the nation's college campuses. Students use micro and mainframe computers to do programming, word processing, and statistical analyses. They work with software that creates spreadsheets, data bases, and graphics. However, many disabled students are unable to use computer facilities without adaptive devices or special modifications.

Among disabled individuals, those who have visual or orthopedic handicaps have the greatest difficulty with accessibility to standard computer hardware and software. About 40% of the nation's disabled college freshmen are either visually or orthopedically impaired, according to J. Brill, Resource Manager of the Higher Education and the Handicapped (HEATH) Resource Center, a program of the American Council on Education (personal communication, May 28, 1987). Brill noted that visual handicaps comprise the most common disability. J.C. De Witt, Evaluations Coordinator of the National Technology Center at the American Foundation for the Blind (AFB), has stated that computer use appears to be an important factor in employability of persons who are blind or visually

Many individuals provided valuable information concerning methods of modifying computer facilities for use by disabled persons. The following people were particularly helpful in developing recommendations for the report: James G. Breene, Awareness Programs Manager, International Business Machines Corporation (IBM); Jay Brill, Resource Manager, Higher Education and the Handicapped (HEATH) Resource Center, American Council on Education; Carl Brown, Director, The High Tech Center for the Disabled of the Community Colleges, California Community Colleges; John C. De Witt, Evaluations Coordinator, National Technology Center, American Foundation for the Blind; Judith Gerber, Coordinator of User Services, Computer Center for the Visually Impaired, Baruch College; and Arthur R. Murphy, Project Instructor, Georgia Computer Programmer Project for Severely Handicapped (physically disabled) Persons, Georgia Institute of Technology.

impaired (personal communication, May 29, 1987). De Witt reported that 70% of visually impaired individuals of working age are not employed. However, only 15% of more than 700 people in an AFB data base for visually handicapped technology-users were unemployed. Of the 85% who were employed, 79% have college degrees. These statistics would appear to have implications for planning computer facilities at schools around the country. Considering the widespread use of computers in daily life, disabled individuals could be further excluded from the mainstream if they do not have access to computer technology (Burkhead, Sampson, & McMahon, 1986).

To develop a plan for improving computer accessibility by disabled students at Teachers College, an assessment of student needs was conducted, alternative methods of computer access were explored, and recommendations were generated for the college's computer centers. This article focuses on recommendations for adapting specific computer models, for modifying computer facilities, and for implementing an adaptive computer station plan.

SOURCES OF INFORMATION

Recommendations are based on a synthesis of information and suggestions obtained from a variety of sources in the form of surveys, interviews, demonstrations, written correspondence, and recent literature. Primary sources of information were professionals in the field of adaptive computer usage for higher and adult education programs and current literature. Other sources were persons with different disabilities, agencies and professional organizations for disabled persons, university personnel, and manufacturers of adaptive computer devices.

Surveys regarding computer facility usage were received from personnel in eight offices for disabled student services in universities across the country and from four disabled students at Teachers College. Two different surveys, one for students and one for university personnel, were developed to solicit information regarding perceived and actual computer-related needs, use, and recommendations. A low percentage of the surveys was returned. In-person or telephone interviews were conducted with 16 university personnel who are involved with disabled students, university computer centers, or both. Additional interviews were held with eight students and employed adults who are blind, visually impaired, physically disabled, or deaf. Further verbal and written information was provided upon request from individuals at 9 national and state agencies and professional organizations for disabled persons and from 10 manufacturer's representatives. Demonstrations of specialized computer equipment were observed at six east coast sites.

RECOMMENDATIONS FOR COMPUTER FACILITIES

A plan for minimum initial modifications to computer facilities is presented in this article. No single computer system can provide for all unique needs, and no single system is necessarily best for any one type of disability. Many fine products exist. A plan that seems perfect at one point may be outdated before it is implemented due to rapid changes in computer technology. Therefore, prior to purchase, specific products should be evaluated to determine whether they actually meet student and professor needs as well as financial constraints at the time and whether a newer product may be better than a recommended one for the intended purpose.

Any plan designed to improve computer accessibility for disabled individuals should incorporate administrative and student needs and should be reexamined following implementation. Present and future needs must be explored. Once a plan for modifying a computer facility is implemented, periodic evaluations should be conducted to assess the degree to which the system continues to meet performance requirements, program needs, and user satisfaction. Further modifications and expansions should be considered when they become necessary or appropriate. As Behrmann (1984) stated, planners must remain alert to new mini and microcomputer developments that might offer viable alternatives for more independent use of computer by handicapped people.

In developing the following recommendations, three major considerations were used: (a) unique needs related to physical and visual handicaps, because these disabilities present the greatest limitations in computer usage, (b) purchases and facility modifications necessary to meet current minimum needs, and (c) cost effectiveness of the product or modification. Some specific criteria that were considered when selecting adaptive devices were (a) technical compatibility with present computers, (b) minimum financial outlay while adequately meeting specific needs, (c) ease of learning how to use the device, (d) user-friendliness, and (e) reliability.

Adaptive equipment was identified for use with microcomputer and mainframe models already located in the three computer facilities at Teachers College. These models include Apple IIe's; Apple Macintoshes; IBM PCs, XTs, and ATs; and a DEC 2060. The suggested modifications permit use of computers by nondisabled students in the usual mode and by disabled students in the adaptive mode. In keeping with the current practice of providing services for disabled students in the mainstream, adaptive computer stations should be located with other computers available for student use.

Equipment Recommendations

Adaptive devices that enable disabled people to access computer equipment commonly used by nondisabled people can be classified according to two purposes: (a) portable devices designed primarily for personal use and (b) modifications made to a computer shared by multiple users. Recommendations in this paper include only the latter type. Prices given for products are manufacturers' list prices in the fall of 1987.

To provide physically handicapped students with an alternative method of using a computer keyboard, purchase of a keyguard should be considered for one microcomputer in each computer facility. Standard keyguards are available for some keyboards, and custom keyguards may be ordered if a standard one is not available.

- Apple IIe and Macintosh
  - Keyguard with latching mechanism, $100
- IBM PC
  - Keyguard with no latching mechanism (Latching capabilities are available from Trace Center), $85
- IBM XT or AT
  - Custom keyboard with latching mechanism, $200
- All Keyguards listed
  - Manufacturer—Prentke Romich Company

The remainder of the suggestions are for blind and visually impaired students, but some may be useful for other students as well. Most are listed according to computer models. When available, methods of performing three different functions are suggested for each computer model. The options include (a) voice, (b) on-screen and hard copy enlarged print, and (c) braille hard copy.

Apple IIe
- Voice:
  - Slotbuster II—speech synthesizer, $150
  - SCAT—screen access software for speech synthesizer, $20
  - Advantages—permits use of much standard Apple software, has good voice quality, enables user to do screen review or editing.
  - Manufacturer—R.C. Systems
- Large print screen display with voice:
  - BEX—word processor and grade 2 braille translation software, $400
  - Comment—Use with Slotbuster II for speech
  - Advantage—is versatile, works with speech synthesizer, can be used with dot matrix printer or braille embosser (to produce hard copy in large print or in braille)
  - Disadvantages—limitations as word processor, difficult for sighted person to use because character-oriented, not line-oriented (i.e., produces screen full of run-on characters)
  - Manufacturer—Raised Dot Computing
- Large print screen display:
  - DP-10—peripheral device, $2695
  - Advantage—enlarges letters up to 16 times original size, permits use of much commercial software, 80 column capability, variable speed control, usable with standard monitor
  - Disadvantage—does not enlarge graphics
  - Manufacturer—VTEK

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Large print hard copy:
Apple Image Writer—standard dot matrix printer, $595
Comment—use with BEX for large print
Advantages—can print characters that range in size from 9 to 24 points, prints graphics
Manufacturer—Apple Computer, Inc.
Braille:
VersaPoint—braille embosser, $3350
Comment—use with BEX for braille conversion
Advantages—permits 40 or 80 column printing, embosses graphics, reasonably easy to use
Manufacturer—Telesensory Systems
Apple Macintosh
Voice:
Quality product unavailable at present
Large print screen display: inLARGE—software, $95
Advantage—best large print capability available for Macintosh
Manufacturer—Berkeley System Design
Large print hard copy:
Apple ImageWriter—dot matrix printer, $595
Advantages—usable with all Macintosh software, can print letters that range from 9 to 24 points in size
Manufacturer—Apple Computer, Inc.
Braille: Nothing available at present
IBM
Voice:
SynPhonix—speech synthesizer, $295
Artic Vision—screen access software for speech synthesizer, $395
Advantages—wide range of functions, variable speed and volume, cursor location and voice synchronized, permits use of menu bar, enables user to do screen review or editing
Manufacturer—Artic Technologies
Large print screen display:
VISTA—circuit board, mouse, software, $1895
Comment—Reportedly works best with enhanced color monitor to avoid "ghost" effect of characters
Advantages—magnifies everything on screen including menu and graphics, enlarges characters from 3 to 16 times original size, single-line display, highlighted viewing window, easy on-screen navigation with mouse
Manufacturer—Telesensory Systems
Large print hard copy:
Due to software limitations, best method is to use office copier with enlargement capabilities to enlarge standard computer print-out
Braille:
VersaPoint—braille embosser, $3350
Comment—requires braille translation software

    Advantages—permits choice of 40 or 80 column printing, embosses graphics, reasonably easy to use
    Manufacturer—Telesensory Systems
    Hot Dots—grade 2 braille translation software, $300
    Advantages—works well with VersaPoint
    Manufacturer—Raised Dot Computing
All Models
  Keyboards:
    Circular, adhesive, felt tabs to be taped to home, command, and commonly used keys (inexpensive). Available in office or home supply stores
  Braille computer paper:
    100 lb. (standard weight), competitive prices
    Manufacturer—American Thermoform
  Quietizer:
    Table-top, sound-proofed hood for VersaPoint braille embosser, $295
    Advantage—reduces noice level of embosser
    Manufacturer—Telesensory Systems

Access to the DEC 2060 mainframe computer can be provided through an IBM microcomputer. Installation of special software and a connection cable permits the DEC 2060 to communicate with an IBM. This enables physically or visually handicapped students who are unable to use a regular mainframe terminal to use the IBM in its usual adaptive mode as a dummy mainframe terminal.

DEC System-2060
  Terminal emulation system
    DECNet communications software
    Comment—permits use of IBM microcomputer as terminal for DEC 2060 mainframe computer
    Manufacturer—Digital Equipment Corporation
    DECNet DOS software and documentation, $315
    DECNet DOS license, $368
    DECNet 20 software and documentation, $3255
    DECNet 20 license, $2625
  Voice: Refer to recommendations for IBM
  Braille: Refer to recommendations for IBM
  Large print: Refer to recommendations for IBM

An optical character recognition scanner, a method which permits blind students to read computer printouts, should be conveniently located near an adapted computer station. One model can be used to transfer written material to computer disks that can then be used with appropriate computer hardware and software for screen editing or for printing in large print or in braille. Consequently this machine can be of equal value to students and to their professors.

Optical character scanner:

Kurzweil Reading Machine, Series 400, $19,800 (includes communication software and training)

Advantages—converts print into speech, thus enabling blind and partially blind sighted users to read printed information and providing learning disabled students with a method of listening to material as they read it themselves; "reads" bound materials and single sheets; can transfer printed documents onto floppy disks; functions as talking calculator; available in six languages.

Manufacturer—Kurzweil Computer Products

When considering a purchase of any product listed, the amount of memory needed should be compared with available memory in the computer for which it is intended because some devices have large memory requirements. For example, because the IBM XT and AT have greater memory than the IBM PC, they would be better choices than the PC for use with many adaptive devices. Memory cards may be purchased to provide increaesd capacity for the Apple IIe.

Facility Modifications

To enable orthopedically and visually handicapped students to use computers effectively, modifications to the facility are needed.

1. Tables with microcomputers that are intended for use by orthopedically handicapped students should be high enough to permit wheelchair access. Table height should allow a minimum of 27 inches from the floor for knee clearance, and the table top should be 28 to 34 inches high, according to the 1984 Uniform Federal Accessibility Standards (UFAS) (Federal Programs Advisory Service, 1986). This is commonly done by using cinder blocks or by using two-by-fours secured to the floor. (Caution must be taken to follow building codes.) If an adjustable-height table is purchased, it should have ample surface for both computer equipment and student's work. Sometimes a sturdy camera tripod to which a detachable keyboard can be affixed is a better alternative than a special table, according to A. Murphy, instructor at the Georgia Institute of Technology Computer Programmer Project (personal communication, June 25, 1987).
2. Aisles, specifically those leading to the microcomputer station on the raised table, must be wide enough to permit wheelchair maneuverability (36–42 inches wide, according to UFAS).
3. Aisles leading to all microcomputer stations with adaptive equipment must be free of obstructions.
4. High intensity lighting should be provided at stations intended for use by persons who have low vision, but care should be taken to reduce glare by positioning the computer screen appropriately.
5. Repositionable monitors, keyboards, and disk drives should be selected, if possible. If this is not possible, these items should be conveniently located to permit easy access.

6. Braille labels should be placed on software that will be used by blind students.
7. A typing, reading, or music stand is useful for holding reference material for both physically and visually handicapped students.

IMPLEMENTATION OF PLAN FOR ADAPTIVE COMPUTER STATIONS

Purchase of adaptive computer aids and modification of the environment are only two steps necessary when implementing a plan to make computer technology accessible to disabled students. A few other issues that should be considered are financial considerations, prepurchase trials, maintenance and service, and staff and training.

Financial Considerations

Financial considerations are varied and significant because of high costs associated with purchases, maintenance and repair, possible facility modifications, and staffing. Gradual addition of equipment reduces high, one-time expenditures and encourages further investments that are based not only on expanded needs and uses, but also on emerging technological advances.

With reference to the budget, a few suggestions should be considered:

1. Approximately 12% of original purchase price of major adaptive devices may be needed for service contracts.
2. Funds must be allocated for special supplies, such as braille printer paper.
3. A portion of the budget, anywhere from 10% to 50%, should be reserved for possible, unforeseen needs and unique, individual requirements. Setting aside funds is a good method of delaying acquisition of items until they are needed, of assuring that limited funds will be used to address actual needs, and of avoiding purchase of items that may not be used or that soon become obsolete.
4. Funds should be appropriated for all components of an adaptive system. Often the extras, such as special software or cables needed to use a device, can be costly.

With reference to funding, public and private sources should be investigated. Colleges and universities have purchased technological equipment through the usual routes of the institution's budgets, philanthropic gifts, specific fund-raising efforts, and public and private grants. Individual disabled students may be able to borrow adaptive equipment or may be eligible for funds to purchase personal physical or sensory aids, such as portable paperless brailler, through agencies such as the Office of Vocational Rehabilitation or the Commission for the Blind and Visually Handicapped. Policies and practices of support agencies vary from state to state and from year to year.

Prepurchase Trials

Whenever possible, specialized hardware, peripherals, and software should be procured on a trial basis. It is important to know whether they work properly with the intended equipment and whether they meet the intended purpose. Demonstrations by a knowledgeable person representing the manufacturer are always a good idea, and they are essential if a prepurchase trial cannot be arranged. Some manufacturers have trial rental plans designed to let a customer use a technical aid for anywhere from 1 to 12 weeks. This practice gives the customer an opportunity to evaluate a product before making a final purchase decision.

Maintenance and Service

At least one individual, such as the person who does routine maintenance and repairs on the college's computer equipment, should learn how to do maintenance and simple repairs on adaptive equipment. In addition, purchase of service contracts should be considered for major adaptive devices.

Staff and Training

Training in the use of adaptive equipment should be planned for at least one staff member in a computer facility and for individuals such as disabled students and their professors who will use the aids in computer centers. In addition, other professors and interested nondisabled students should have an opportunity to learn the basics of using specialized equipment. Training should be designed to teach methods of using hardware, software, and adaptive devices effectively and comfortably, with as little assistance as possible.

Some manufacturers offer on-site or off-site training in the use of their equipment. One university's disabled student coordinator reported a preference for hiring a proficient person to conduct training sessions once a year (R. Pollack, personal communication, May 27, 1987).

Each semester, computer facility staff members should schedule training programs in the use of specialized computer systems. Staff members also should provide individual consulting services as needed to students, professors, and other college personnel. A consultant who is familiar with the adaptive equipment should be present in computer centers during times when computers are most frequently used, or during prearranged times, and whenever else scheduling permits. In addition, room orientation sessions should be scheduled for some disabled students such as those who are blind, partially sighted, or orthopedically handicapped. These sessions should be held prior to use of the computer center and following any rearrangement of the room.

CONCLUSION

The overall goal is to enable students who have visual, orthopedic, or other impairments to use microcomputer and mainframe hardware and software programs, to the greatest degree possible, to perform computer activities that are an integral part of course requirements. Innovative technology that facilitates computer use by disabled persons currently exists. Modification of computer systems can improve services for disabled students and for their professors.

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Establishing Dialogue: An English Professor and a DSS Coordinator Discuss Academic Adjustments

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Sam Goodin, *Coordinator—Disabled Student Services, Indiana University—Bloomington*

EDITOR'S NOTE: The following exchange of letters is the first in a two-part series on academic adjustments as viewed from both the faculty and service provider's point of view. The authors are father and son. Dr. George Goodin has taught English Composition for over 30 years and is a former Director of the Composition Program at Southern Illinois University at Carbondale. He is currently an Associate Professor in the Department of English.

Sam Goodin is well known to Journal *readers as an active member of AHSSPPE, as well the Coordinator of Student Services at Indiana University in Bloomington.*

Their dialogue is published in the hopes of illuminating similarities and differences in perspectives between those of us who provide student services and those of us who teach. As always, reader comments are welcomed.

Dear Sam, 10 June 1987

I promised to exchange some letters with you about the problem of students with learning disabilities in composition classes, so that we'd have a record if we discovered that we were doing anything more than helping each other with our work—if, that is, we had anything to say on the subject to anyone else. Now that I've digested, or at least ingested, the ream of paper that you and Ron Blosser sent me on LD students, I'll start redeeming my promise.

I don't know how typical I am of the faculty members that you must deal with in helping LD students, but I'll start by pointing out a few things about myself as a university teacher. You already know some of it, but I want to lay it on the table anyway. Perhaps you'll want to show it to some of your colleagues or students, to let them know what they're up against.

I would probably not be a university teacher today if I had not won a Navy scholarship to get my undergraduate education. I was selected after being given a standard college entrance examination and an even more grueling physical examination. I could take no credit whatever for passing either. I just happened to have straight enough teeth, to be tall enough but not too tall, to be able to do algebra because I thought it fun, and to be able to do words because that was the easiest way I knew to make jokes. Since I never felt that I had done anything to "deserve" getting selected, I never felt that those not selected received full justice.

I point this out for a couple of reasons. First, there are limits in the ability of institutions to achieve justice. That doesn't mean that we should simply accept all injustice, and I applaud your commitment to justice for the disabled. Nevertheless, justice does have limits, and there is such a thing as trivial injustice. As a result, people with some speech impediments should not complain at being refused jobs as radio announcers, and males shouldn't make a fuss at not getting to become homecoming queens.

Secondly, what the Navy was looking for when they gave me a scholarship was essentially what universities are looking for today—abilities, not disabilities. According to St. Paul and to Natty Bumpo in Cooper's *Leatherstocking Tales*, different human beings have different "gifts," so we cannot make into a social goal, as some people do, the homogenizing of the human race. Those students who are "learning disabled," in the ordinary sense of the word, simply should not be in universities. They should be in some situation for which they are "abled."

As you've probably found out already, then, you have a partly semantic problem. Most of your students are "abled," yet people in your profession—ordinarily masters of euphemism—have chosen to describe them not only as disabled, but as disabled in the only way which could justify their exclusion from universities. I wish I could help you to a better term, something on the order of "the blind, the halt, and the lame," which I recommend as models of the term you need. The only candidates I can suggest are "cognitively anormal" or, better I think, "intellectual left-handers," which I propose without regard to the suggestions I find in the research you sent that LD students tend to have better functioning of the right than of the left brain hemisphere. Perhaps you need not so much an overall term as a lot of little terms, preferably nontherapeutic and nonbureaucratic terms. Who the hell wants to be a "patient"or a "client"?

Undoubtedly, people in your field know about the semantic problem, so let me go on to another problem you have, which I will call metaphysical because I was first taught about it in metaphysics class. It concerns the idea of "ability" or "capability" or "potential." Perhaps, it will be clearer if approached in a literary way. In Edward Albee's *Who's Afraid of Virginia Woolf?* a woman seduces a young man only to discover that his sexual performance leaves a lot to be desired. When she taunts him with the fact, he claims to have great potential, but she doesn't give a damn about his potential. She has intuitively grasped the elementary fact which the metaphysicians discovered more laboriously, that there is no such thing as "potential" which does not exist as something actual. In short, the abilities of your students, like those of other students, must manifest themselves as the sort of competencies which universities are designed to nurture. If you call a faculty member to tell him that John Doe will never be able to keep letters or numbers properly sequenced, you better tell him also what John is able to do besides watching TV and listening to rock. If John can do higher but not lower mathematics, or poetry but not spelling, a university should welcome him, because although universities like to turn out well-rounded people, they also like to turn out well-lopsided people.

Let me make one more point, and I'll try to stop preaching at you on matters which you're already persuaded of in large part. Despite their public image as flaming liberals or loud radicals, university faculty members are the most deeply conservative bunch of people I know, because they see limits everywhere. Outsiders often call them "experts," but they rarely call themselves that because they can readily see the limits of expertise. They know that every increase in their knowledge brings an even greater increase in their ignorance, so it often seems to them as if they differ from other people largely in knowing more questions, not more answers. They know the limits not only of expertise, but also of education. When, therefore, ordinary people look to education to solve all human and social problems, from unwanted pregnancy to reckless driving, they are very likely unless they are interested parties such as sex educators or driving teachers to insist on the limits of education, on what should not be expected of it. At its best, a university is a temple of Apollo, the god not only of knowledge but of limits, and trying to have it serve other gods, even good ones, is seen by many faculty members, including me, as carrying the risks of having it serve worse ones. If you want to meet Utopians, then you have to go to university administrators, or to advertising executives.

This conservatism is not the only reason that faculty members look "hard-nosed" to those asking them to "accommodate" students. The fact is that the great preponderance of requests for accommodation come from ordinary students and are not justified. Most are made by and on behalf of the culpably ignorant, lazy, or improvident—students who act as if a college or university existed to train people in negotiating their way to some certification entitling them to a comfortable living. In the last couple of decades, such pressures on the faculty have increased. Some students have even been so brazen as to suggest that the jobs of the faculty members themselves are in danger if more incompetence isn't accommodated, and I regret to say that many faculty members seem to willing to accommodate it for just that reason. Sometimes I have felt as if I were being asked to conspire with students and administrators to rip off parents and taxpayers, and increase even more the number of pretentious incompetents. To a great extent, high schools gave in to such pressures long ago, and like many of my colleagues I find their experience a somber warning against doing the same.

If we believe that, as a rule anyway, the customer isn't right, that doesn't mean that we're a bunch of egoists who think that we are always right. The first loyalty that I felt in my profession was not to myself, and not even to my profession. (As a matter of fact, I've begun to think that "professionalism" serves mainly to mystify the laity.) My first loyalty was to my field, English language and literature. I know that sounds abstract, perhaps like a mystification itself, but remember that college and university faculty members, unlike most high school teachers, are researchers. They want to increase the intelligibility of their field. They experience it as an impersonal challenge to them, one offering little in the way of accommodation. They know it the way sprinters know that they are racing against a track and a clock, up against a challenge in the face of which negotiating skills are irrelevant. I went into college teaching instead of high school teaching because I wanted to learn more about English, rather than about how to fit English into other people's heads. If I know what I'm talking about and my students care about the subject, it is as much their job getting the knowledge out of me as it is mine to get it into them. Only in recent years have I started to admit that this conception of my primary loyalty is a bit narrow, but although I've started to see loyalty as responsibility to students, it is not to what they are now, but to what they could be if they took up the challenge of knowledge. To the extent that they do, they will ask less and less in the way of accommodation.

I want to get more specific now, and as often happens when people get more specific, more conciliatory as well. You are interested especially in the problems of LD students in English composition classes. I'd like to help you and the students as much as I can.

So far, I've treated "faculty" as a pretty homogeneous bunch, and advanced some generalizations which may be pretty rash. In dealing with composition, the faculty who teach it, and the students in the courses, your problem (and mine) is more likely to be heterogeneity to the point of chaos.

If composition courses operated the way that most college courses do, the student would learn "about" composition, perhaps write a paper or so about it, and take examinations based on what the course presented on the subject. Composition is a part of the field of rhetoric, concerned, like composition in other fields, with the arrangement of information. Since its principles have been studied for well over 20 centuries, they could be taught to students much in the way that the laws of physics are, and those students unable or unwilling to learn them could be failed. But few composition courses proceed in this way. Instead, they are concerned with what students can DO, rather than with what they know. Students are expected to demonstrate that they can write up to some acceptable level, and if they can do so without knowing explicitly the the principles of composition, most teachers will be very well pleased. Since the compositions are not usually about rhetoric, we have here a course which does not have a subject, at least in the usual sense of the word.

It is a commonplace among writing teachers to say that their courses have no subject matter, but they respond in several different ways. Many comedians among us have suggested that since we're trying to produce certain behaviors and inhibit others, electric shock might be the best method to use. If students were jolted every time they produced an unintelligible sentence or grammatical error, the means, though inhuman, would at least be appropriate in the end. Most teachers respond by giving instruction in certain principles of writing, then having students write compositions about various subjects. The students are not expected to show much knowledge about either rhetoric or what they're writing about, and the writing is judged largely for its value as writing, rather than for its adequacy to its subject. My own response owes much to Socrates. When rhetoric courses were first established he objected on the ground that they ignored whether a composition was right or wrong in what it said. I'm sure that today he'd join me in proposing that writing courses be abolished. Then people would learn to write in the only way which has ever really worked, by having to make sense about real subjects.

But now I'm getting Utopian. For many reasons, most of them bad, composition courses will continue. Since standards of adequacy to a subject cannot be used in them without turning them into courses in that subject, many students become baffled about what's expected. They're told to produce good writing. But writing cannot be judged except in relation to its purpose, and its purpose is usually to treat a subject. Since this standard cannot be used, other standards have evolved. They are often arbitrary, vague, and contradictory. They easily lead to writing utterly unlike that produced outside composition courses. Worse still, the chaos of these standards requires many students to negotiate their way through the course. In an ordinary conference between an ordinary teacher and an ordinary composition student, over half the time will be spent on what you call "accommodation."

There are a couple of bright spots, however. The first is that you should have no trouble in talking accommodations with composition teachers because unfortunately they already talk about them far more than do other teachers. The second is that many of the problems LD students have with composition courses do not stem from learning disabilities. Perhaps knowing that will bring them cheer, much in the way that Freud expected his patients to be cheered when he told them that he hoped to improve them to the point at which they would have the same frustrations as everybody else had.

To you and your students then, welcome to the club.

Love, Dad

Dear Dad, August 15, 1987

I was struck by your assumption of an adversarial relationship between instructors and those providing support services as well as your description of faculty as "hard-nosed," and "the most deeply conservative bunch of people I know." You suggest that I might show your letter to some of my colleagues to "let them know what they're up against." While I have run into my fair share of faculty whom you aptly describe, I keep reminding myself that they represent a small percentage of all faculty with whom I work. About 90% of the time the students are treated appropriately without my getting any flak about it. About 5% of the time I would say the faculty member has gone too far in accommodating the student. As part of a workshop Rich Harris does for people new to the field he instructs them that people with disabilities are to be flunked, fined and fired—the point being that when the situation warrants it they are to be treated like anyone else. My research on the opinions of AHSSPPE members about academic adjustments shows that they differ very little from those of a small sample of faculty members surveyed with the same questions.

I understand your point that these students must have abilities as well as disabilities if they are to belong in an academic environment. I don't, however, share your optimism about universities being so interested in turning out well-lopsided students. There is not nearly enough communication between departments for well-lopsided students to have as easy a time of it as you suggest, or in many cases as they deserve. If I designed universities, no department would have all of its instructors located in the same building. For the purpose of avoiding faculty burnout as well as the good of the students you shouldn't even have someone from your own department in the offices adjoining yours.

Intellectual left-handers? I like it, but as a general rule I stay out of debates about semantics. I am told that at one time there was nothing wrong with being a "moron" or an "idiot." Now even "retarded" is going out of style to be replaced, I guess, by "differently abled." Except where cumbersome I have gone to referring to a "person with a disability" rather than a "disabled person."

Perhaps I should now get down to some concrete cases in which the faculty did not, at least immediately, accept accommodations. In most of these cases, and I use the word because of its clinical overtones, the instructor has some sort of hidden agenda. The issue is not just this particular accommodation for this particular student. Remember the math instructor I told you of who would not give a student extra time on an exam because the Mathematics Department was "the only one on campus maintaining any academic standards"? Such faculty members often have an ax to grind or got up on the wrong side of the bed. More often than not, they are just burnt out. These can be the easy cases to deal with because such instructors usually have little support within their departments and do not care enough about their work to spend any time fighting with me.

In the more interesting cases the instructor genuinely wants to be fair to all students in the class and is not averse to talking with me about how to do it. Often, the problem becomes one that Peggy Elliott has described well: "two words that our present instructional activities suggest are synonymous are 'fair' and 'same.' We report that we have been fair if we have treated every student in exactly the same way." I had a professor call me once and ask how much extra time he should give a learning disabled student to complete an exam so as to maintain the same speeded character of the test that existed for his other 300 students. I told him that given the complexity of the human mind and our limited understanding of how it functions and dysfunctions I could not answer his question. He then decided not to give the accommodation of extra time. He eventually gave the student extra time on the exam after I provided his department chair with data showing that this instructor's response was seriously out of line with those of his colleagues. This is not the way I like to win these battles, and would rather he had changed his mind when he discovered that by not using the learning disabled student's score when creating his curve he could be fair to the other students.

Another problem came when a graduate instructor from Japan refused extra time for a learning disabled student, saying that in the courses he took as a student he himself needed more time because of his lack of familiarity with the English language. This was interesting for two reasons. First, because of their zeal and inexperience, I have more problems, at least initially, with graduate instructors than with professors. But they usually do find it easier to talk to me, and they are more easily persuaded by their departmental chairs, as it was in this case. Second, I sympathized with his difficulties in taking examinations as a student. Indeed, I was in a class the following semester in which the professor announced that foreign students having difficulty with time constraints on an exam could stay after class to finish.

Underlying many of these encounters is a bastardization of academic freedom. If instructors would like to slander my person or profession I would defend their right to do so. However, when clear-cut civil rights arguments conflict with academic freedom, our priority should be civil rights. Admittedly, for many people, cases involving students with learning disabilities are less likely to constitute "clear-cut cases" than those involving more visible and more easily defined disabilities. For this reason I will illustrate what I have in mind with a case which did not involve a student with a learning disability but rather a student who used a wheelchair. This student's instructor wouldn't move his class to a wheelchair-accessible classroom because the acoustics were better in the room where the class was being held. Such debased academic freedom should also take a back seat to obvious commonsense. This would include the case where the instructor changed the time he was scheduled to give a final exam. It resulted in one student having two exams scheduled for the same time. When she asked the instructor if she could take the exam or a make-up exam at a different time, he refused. The dean who told me this lamented that had the student not cussed at the instructor after he refused to change the exam it might have been easier to resolve the problem. I don't advocate profanity but my sympathies were with the student. In cases such as these I think the role of campus administrators is not to continue with gentle persuasion and encouragement but to just tell the instructor what to do. I've given up offering this advice not because I get good counterarguments but because people just sigh or suggest that I might be happier working at the University of La Mancha.

The only counterargument I have ever gotten was that minor justified intrusions would lead to major unjustified intrusions. This argument has too much in common with the domino theory and the NRA's rationale for protecting plastic guns for me to get overly concerned about it.

I also have some questions about how psychologically healthy such academic freedom is for those it is designed to protect. In general the ivory tower can be an odd and unreal place to live. That is not all bad but let me give you one way in which it is unhealthy for its inhabitants. An article in the *Chronicle of Higher Education* last year suggested that, given its hands-off atmosphere, teaching on a college or university campus is an ideal environment for an alcoholic. I think we have seen enough instances of this that I need not elaborate on it. Furthermore I have strayed fairly far from my topic.

In some cases the rationales for refusing accommodations simply look like excuses. Some instructors may try to make the procedures for our proctoring one of their examinations so complicated as to make it infeasible. One expressed fear that the extra time he would have to spend to administer his tests would take time away from his research, but, strangely enough, he volunteered to invest extraordinary amounts of time in private tutorials of the student. Such an excuse, I suspect, is a more common problem for me at a "four-year research institution" than it may be for many of my colleagues. Nonetheless, it does bring up the age-old question which you mentioned as to what instructor's priorities should be.

I can't claim to shed any new light on this question, but I would like to tell you about some things I read recently which were put forth by people who have spent more time pondering this question than have I. Bill Bennett, of all people, in an address given at, of all places, Harvard said,

> American colleges and universities are quick to proclaim their duty to address all sorts of things that are wrong in the world, to speak truth to power, to discourse on the most complex social and moral issues beyond their walls, and to instruct political and business and religious leaders on the proper path to follow. But they have a prior duty, which is to see to the education of the young people in their charge. They ought to be expected to take a proctor's interest in that education—this is, after all, what they are paid for. Some do—perhaps especially the smaller, less famous institutions. But too often our institutions—especially our most prestigious institutions—fail in the discharge of their educational responsibilities."

And Ernest L. Boyer, quoted in the *New York Times*, stated, "In our national survey over 60% of the faculty said that their preferences were to teach and not do research. Over two-thirds. And an equal number said they believed tenure and promotion should be based on teaching, not research." I can only echo Mr. Boyer when he asks, "What's going on here?"

By the way, I would like a little more time to do research. Maybe then I wouldn't spend part of my Christmas vacation each year tying up your word processor. Speaking of which, I am looking forward to seeing you at Christmas and also to your next letter.

Love, Sam

Using Computers to Present *Woodcock-Johnson Psycho-Educational Battery* Results to Postsecondary Students with Learning Disabilities

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ABSTRACT

This article describes a computer-enhanced procedure to increase the effectiveness of clinical interpretation of the Woodcock-Johnson Psycho-Educational Battery [*WJPEB*] *for postsecondary students with learning disabilities. The author has used commercially available computer graphics software to present individual subtest performance and aptitude/achievement discrepancy on the WJPEB visually. In a preliminary study, when oral test interpretation was enhanced by computer graphics, LD students reported high levels of satisfaction with the information they received. These findings have relevance for LD support service providers, in view of the need for learning disabled people to understand the meaning of the LD diagnosis and their individual strengths and limitations.*

Despite reported criticisms and limitations (Hoy & Gregg, 1986; McGue, Shinn, & Ysseldyke, 1982), the *Woodcock-Johnson Psycho-Educational Battery* (WJPEB) (Woodcock & Johnson, 1977) remains one of the most frequently used tools to assess learning disabilities in children and adults. In view of the need for increased self-awareness and self-advocacy in the postsecondary setting (Dalke & Schmitt, 1987; National Joint Commission on Learning Disabilities, 1985), it is alarming that LD adults frequently do not understand the meaning of standardized test results as part of their LD diagnosis, nor do they understand the

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specific ramifications of their learning disability on academic performance and learning (Price & Aase, 1987).

If WJPEB results are to be a meaningful part of an individual's learning disabilities assessment, test results must be communicated clearly to the LD student. LD individuals frequently learn best when information is presented in several modalities, or in their strongest modality (Nayman, 1982; Scheiber & Talpers, 1985). Nevertheless, practitioners often present test results to LD individuals in oral, written narrative, or numeric form, even though it may be difficult for people with learning disabilities to fully comprehend material presented in any of these modalities.

An alternative method is to present test results using a combination of verbal explanation and clear, strongly visual materials produced on the microcomputer. Providing the LD student with graphic illustrations of test results can be especially helpful when students have difficulties with auditory processing, short-term memory, or transfer of information from one setting to another. Computer-enhanced graphics may help the LD student to conceptualize abstract constructs such as "subtest scatter" and "aptitude/achievement discrepancy," which are often difficult to grasp.

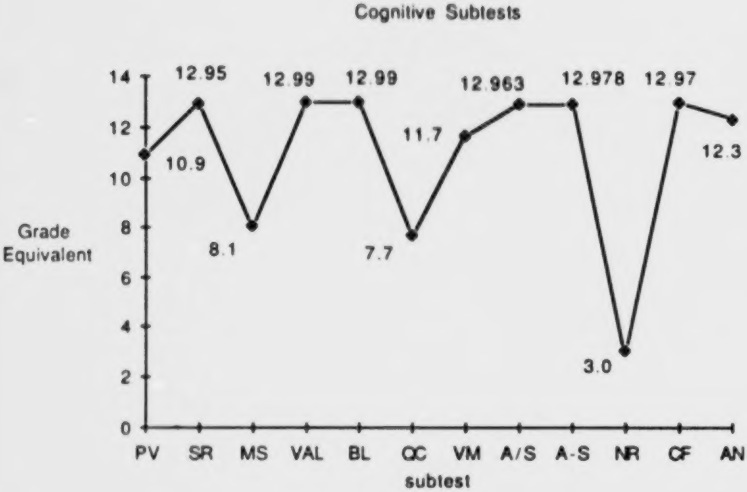
The high resolution graphics made possible by the Macintosh and similar microcomputers, dot matrix printers, and easy-to-use, readily available commercial graphics software put computer-enhanced materials well within the reach of most postsecondary support service professionals. In addition, when the student agrees to allow confidential testing information to be released, nonspecialist faculty and other support service personnel will find graphic representations of test performance helpful in understanding a particular student's learning style, strengths, and limitations.

The author has used *Microsoft Chart* (Microsoft Corporation, 1984) and the Macintosh™ to produce line graphs that represent subtest scatter on the WJPEB Cognitive and Achievement battries (see Figures 1 and 2). Individual subtest scores are computed from McGrew and Woodcock's (1985) derived subtest norms, which were published subsequent to the original test battery and manual. It is especially helpful to use the computer to graph these individual subtest scores, since there is no place to record them in either the WJPEB test booklet or *Compuscore* (Hauger, 1984), a computerized scoring system compatible with either the Apple IIe or IBM PC.

Line graphs of individual subtest scores (i.e., grade equivalents) help students to visualize and understand patterns of variability in performance, as well as their strengths and weaknesses in specific areas. Understanding areas of greater and lesser strength in measured aptitude and achievement can help support service staff to suggest more effective academic accommodations and compensatory strategies, and to assist the student in developing realistic academic, vocational and personal goals.

The author also uses *Chart* to produce bar graphs depicting aptitude/achievement discrepancy for math, reading, and written language computed either by *Compuscore* or from the hand-scored test form. Bar graphs are especially useful when explaining aptitude/achievement discrepancy to students, because

Figure 1
WJPEB Cognitive Subtests for Student L.M.



PV = Picture Vocabulary
SR = Spatial Relations
MS = Memory for Sentences
VAL = Visual-Auditory Learning
BL =Blending
QC = Quantitative Concepts

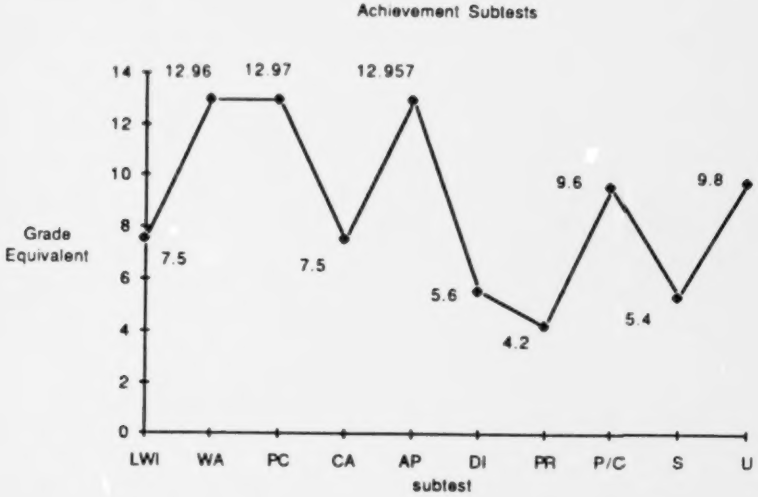
VM =Visual matching
A/S = Antonyms-Synonyms
A-S = Analysis-Synthesis
NR = Numbers Reversed
CF = Concept Formation
AN = Analogies

differences between expected and actual achievement are so easily visualized (see Figure 3).

Other microcomputer hardware/software configurations may be easily adapted to the graphics applications shown here. WJPEB interpretations using computer-generated visual aids typically require about 20 to 30 minutes with most LD individuals. Students are given their own copies of all graphs and numerical test scores. They also receive a two-page handout with brief descriptions of each WJPEB subtest, what it purports to measure, and a key to the subtest abbreviations used in the graphs (See Hessler, 1984, chapters 3 and 4 for an excellent description and discussion of the WJPEB cognitive and achievement subtests). Students are encouraged to return when questions about tests results arise, as is frequently the case after an initial interpretation session.

The author has conducted a preliminary study of computer-enhanced WJPEB interpretation, in which Parts I and II of the WJPEB were administered

Figure 2
WJPEB Achievement Subtests for Student L.M.



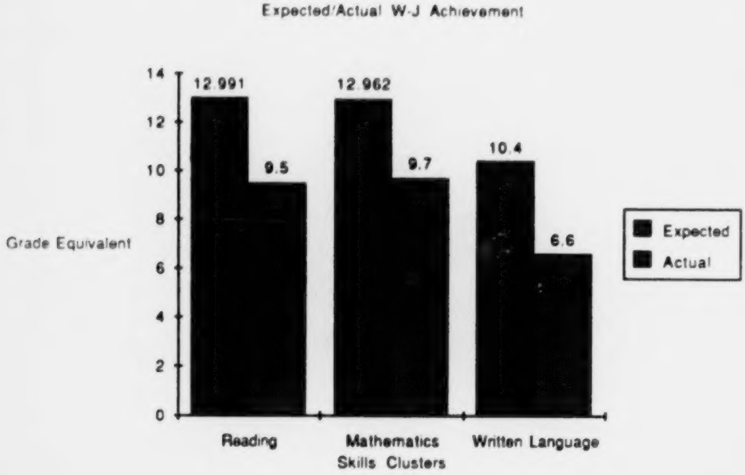
LWI = Letter-Word Identification
WA = Word Attack
PC = Passage Comprehension
CA = Calculation
AP = Applied Problems

DI = Dictation
PR = Proofing
P/C = Punctuation/Capitalization
S = Spellling
U = Word Usage

to 15 first-year college students currently receiving LD services at the University of Minnesota. When surveyed, 70% of those respondents whose WJPEB interpretations were augmented with *Compuscore* and graphs identical to Figures 1 through 3 indicated that the WJPEB assessment and interpretation were helpful in gaining an understanding of their learning disability (mean = 4.0 on a 5-point Likert-type scale).

While preliminary results with the computer-enhanced test interpretation are encouraging, the sample is too small to draw firm conclusions. In addition, empirical study was not possible, because ethical considerations precluded withholding the computer-enhanced interpretation from a control group. (The setting in which these procedures were piloted is a federal demonstration project studying the impact of microcomputer word-processing with LD students as an accommodation for dysgraphia, in which the principal research questions do not concern the LD definition or LD assessment issues *per se*.) However, it is the author's opinion that a 20- to 30-minute individual oral test interpretation, augmented by the visual/graphic enhancement reported above, contributed significantly to the students' increased self-awareness and understanding about

Figure 3
WJPEB Aptitude/Achievement Discrepancy for Student L.M.



their learning disability. The satisfaction reported by those students who received the enhanced interpretation suggests the effectiveness of the procedure and has implications for further study by support service providers and researchers in the LD field.

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in review

Seeing Disability Through New Eyes: A Presentation by Roger Kerns

Reviewed by ***Roxanne Baker****, University of Washington, Seattle*

I commend the presentation by Roger Kerns, entitled "Seeing Disability Through New Eyes." This program consists of an oral presentation by Kerns, a showing of the award-winning video "Looking Up," and a group discussion. I found it to be a "tell it like it is" story without the pathos or hype usually associated with programs of this type. I wholeheartedly recommend it for curriculum, staff training, or general awareness workshops.

Earlier, I was one of the people requested to preview the film "Looking Up" by Dee Packard, the producer of the film and a friend of Kerns'. I had just spent many hours viewing all the disability-related films in the University of Washington Instructional Media Service, as well as all those available locally through several disability orgranizations and agencies. Most were outdated and tended to perpetuate old, biased attitudes toward disabled persons. I found "Looking Up" to be a refreshing change. It is an awareness film appropriate for postsecondary education staff, students, and faculty. It would also be appropriate for in-service training, medical school, social work, and allied health programs.

Now Kerns has combined the video with a lecture and group discussion to make "Seeing Disability Through New Eyes" a very effective presentation. The program includes a viewing of this film with discussion that dramatically clarifies the distinction between having a disability and being handicapped. It personalizes insights into the different ways we disable ourselves and others and increases people's ability to see disabled persons as people first. I heartily recommend both the presentation and the film to higher education staff, faculty, and disabled student service programs.

The cost of the presentation is $350 plus travel and accommodations. For scheduling information, contact Roger Kerns, 4726 N. Everett, Portland, OR 97213, (503) 234-4947.

# of interest in recent publications

Funding Sources for Visually Impaired Students in Higher Education by M. Traber, In *Journal of Visual Impairment and Blindness,* Volume 81, Number 10, pp. 472-476.

Visually Impaired Students in Higher Education in Norway by E.M.M Haugann. In *Journal of Visual Impairment and Blindness,* Volume 81, Number 10, pp. 482-484. December, 1987.

Planning Inservice Presentations by T. Fairchild. In *Techniques,* Volume 3, Number 3, pp. 196-204. July, 1987.

Attitudes of Faculty Members Toward Treatment of Disabled Students Reexamined by E. Shoen, M. Uysal, & C.D. McDonald. In *College Student Journal,* Volume 21, Number 2, pp. 190-193. Summer, 1987.

The Use of Information to Improve Pre Service Teachers' Attitudes Toward the Handicapped by J. Sanders, Jr. In *College Student Journal,* Volume 21, Number 3, pp. 300-304. Fall, 1987.

Writing with Computers: Implications from Research for the Language Impaired by L. Bridwell-Bowles. In *Topics in Language Disorders,* Volume 7, Number 4, pp. 78-85. September, 1987.

Organizing to Meet the Needs of Handicapped Students by R. Michael. In *Community College Review,* Volume 14, pp. 36-40. Winter, 1986-87.

Preparation of Student Services Professionals and Faculty for Serving Learning-Disabled College Students by D. Aksamit, M. Morris, & J. Leuenberger. In *Journal of College Student Personnel,* Volume 28, pp. 53-59. January, 1987.

A Comparison of Able Bodied and Disabled College Students on Erikson's Ego Stages and Maslow's Needs Levels by K. Kriegsman & D. Hershenson. In *Journal of College Student Personnel,* Volume 28, pp. 48-53. January, 1987.

Loneliness and the Mainstreamed Hearing Impaired College Student by J.S. Murphy & B.J. Newlon. In *American Annals of the Deaf,* Volume 132, Number 1. March, 1987.

Work, Disability and the Future: Promoting Employment for People with Disabilities by R.T. Roessler. In *Journal of Counseling and Development,* Volume 66, Number 4, pp. 188-190. December, 1987.

The Predictive Validity of the GRE General Test for Disabled Students by H. Braun, M. Ragosta, & B. Kaplan. *ETS Research Report 86-42*, Educational Testing Service, Princeton, NJ. November, 1986.

The Association on Handicapped Student Service Programs in Postsecondary Education is a national, nonprofit organization of persons from all fifty states, Canada, and other countries committed to promoting the full participation of individuals with disabilities in college life. Since AHSSPPE began in 1978, its membership has grown to over 500 individuals from more than 350 institutions. The Association has sponsored numerous workshops and conferences that have focused on common problems and solutions in upgrading the quality of services available for handicapped students within postsecondary institutions.

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Volume 6, Number 3 Summer, 1988

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speak out

Creating "Safety Nets" in Residential Settings

***Susan A. Vogel**, TRI-Services National Institute of Dyslexia, Chevy Chase, MD*

Establishing autonomy is a major developmental hurdle for all young adults—especially for those with learning disabilities whose parents and teachers have tried to anticipate problems and prevent failure experiences. Parents and professionals recognize that their LD young adults are justifiably anxious to get on with their lives as independent self-sufficient human beings. In my work with LD young adult college students, I have observed extremes, including the parents who want to take charge of everything, even registering for their adult "child" in the fall semester of the freshmen year, as well as the ones who say to their son or daughter "Call me if you have a problem."

Prolonged adolescence often brings LD young adults to the struggle of achieving autonomy later in life than their non-LD peers, brothers, or sisters. Therefore, some may move into independence with urgency and energy. Others will continue prolonged dependency into their late twenties, with resultant parental feelings of perplexity and confusion as to their role.

Parents are often unsure as to how much they may have contributed to their son or daughter's lack of readiness for adult responsibility, having either done too much or given them the impression they were incapable of managing by themselves (learned helplessness). Parents may be exhausted from the adolescent years' battles and turmoil; when their son or daughter goes off to a residential postsecondary setting, they may experience a welcome relief. Parents have difficulty learning how much counsel, assistance, and consultation, even by long-distance telephone, are appropriate both with their young adult child and college admissions officers, academic advisors, faculty, and administrators.

When the young adult has a chronic medical illness, this transition is even more difficult for parents and for their son or daughter. This reality was painfully learned with one such student. I want to describe specific management guidelines we developed for young adults in residential postsecondary settings who are both learning disabled and seriously ill, whether emotionally or physically based, requiring complicated medical treatment. It is hoped that knowing of this experience will spare others—parents and professionals alike—a similar tragedy.

I want to share my experiences with a seriously ill young woman of 26 whose deteriorating condition went noticed but untreated until it was too late, not because people did not care, but because of her wish for autonomy. Karen* was 24 when she came to Barat College. She had considerable maturity, a love of life, and well-formulated plans. In answer to the question "What do you plan to do after college?" she wrote:

> I hope to get a job working as a counselor for Planned Parenthood. If there is no position available, then I will try for a job with a private agency thats role is equivalent to Planned Parenthood. If that fails, then I will be happy to work in the state, federal, or local governments as a counselor for drug rehabilitation, abused children, or whatever they happen to give me at the time. If the government still has a hiring freeze on, then I will go into the business field and try to get a job in the Human Resources Department.

Shortly before coming to Barat, Karen was diagnosed as having multiple endocrine disorders, including Addison's disease and diabetes, which, in combination, make treatment very difficult. She received the best of care from her loving and devoted parents. She was trained in medication regulation using the most up-to-date technology. In spite of her nonverbal learning disabilities, she was competent in handling the mathematics necessary to regulate her insulin and other medications. We all wanted her to live a normal life, functioning as independently as other capable 24-year-old college students. Things were going well for Karen academically, and she even had a boyfriend. Karen lived on campus, had her own car, and was fiercely independent. She resisted the natural tendency to be overly concerned about her health.

In December of her second year at school, we all noticed that Karen was not looking well. She had lost a great deal of weight. It was a tense time for all; exams were in progress and there were many students needing extra time with their LD specialists. On one Monday morning, Karen did not appear for her usual 9:00 AM appointment. Her devoted therapist and friend telephoned the dorm room, but no one answered. Could Karen have gone home for the weekend, stayed up late studying, or been with her boyfriend, and overslept? Faculty row was wall-to-wall students, and each LD specialist was booked solid. And Karen had a roommate; should something have happened to her, she would have gotten help.

What we didn't know was that a series of events, some known to her parents, some known to the college infirmary staff, and still others to the local hospital staff (each in isolation), had led up to Karen's entering into insulin shock and then a coma. First, Karen's parents noticed she was overmedicating herself. Indeed, this is why she had become so skeletal. Second, we learned that the night before that fateful morning she had passed out and had been rushed by ambulance to the local hospital. Noticing her medic alert bracelet, the hospital telephoned the appropriate number only to be told they had no records on Karen. While in the hospital, Karen's struggle with autonomy prevailed, and she denied permission for the hospital to notify her "next of kin." Neither did she want her parents to be alarmed, and instead she agreed to call her parents to tell them she was okay. When she was considered stabilized, the hospital released her, still unaware of her medical history. At 1:00 AM in the morning, she dutifully called her parents, woke them from a sound sleep, and to their bewilderment told them she was just calling them to tell them she was okay. They were perplexed, but did not register alarm. After all, she said she was okay, but of course she was in no condition to be the judge of that.

---

*Name changed to protect anonymity of family.

When Karen awoke the next morning, she was alone in the room. As fate would have it, her roommate had still not returned from the weekend, and Karen, disoriented and weakened, fainted while getting dressed for her 9:00 AM appointment. She remained unconscious in her room for 6 hours. When she was found by her returning roommate, it was too late to save her.

After the shock, self-questioning, grieving, and sleepless nights, I struggled with how we might have been able to prevent Karen's death and in response developed these guidelines. First, if a seriously medically ill individual is accepted into a residential setting, she or he must be willing to be cooperative and agree to full disclosure, communication, and a cooperative treatment plan. There is an urgent need for total communication among the student, health professionals on campus, medical specialists prescribing and treating the individual, family doctor, parents, psychotherapist, counselor, social worker (if involved), dormitory personnel, roommate, and LD staff. At an initial meeting of this group that should take place early in the semester, medical staff from the university health services, the family physician, or other medical specialist should provide background information about the specific disorder and possible changes in appearance or behavior that would be danger signals, including medication side effects. Second, a communication network should be established for the student to report by phone any unusual medical circumstances, with a second and third phone number listed for back-up. Should the student's judgment be impaired, this listener would be in a better position to judge the seriousness of the situation and to seek medical advice, as needed. Third, one of the medical specialists should be designated as the case manager. The student's roommate would have the student's permission to contact the case manager or communication network in case of concern or emergency. Weekly staffings should include an update on the student's condition, significant events, or changes in status. Fourth, if a radical change in appearance or behavior is observed by anyone, including the parents, the observer should have a conference with the case manager and the student to share perceptions and determine a plan of action. Fifth, if further medical consultation is needed, the student should be seen by the specialist to determine the appropriate treatment plan. Sixth, if the student requires any emergency medical treatment, whether on or off campus, the student must inform the case manager, who would then alert everyone in the communication network. Seventh, if necessary, a buddy system or medic alert beeper should be provided until the student is stabilized. Medic alert beepers or bracelets worn in case of such emergencies should be routinely checked. Frequent monitoring, reassessment, and communication among those in the communication network continue until the student is returned to good health.

Since Karen's tragic and untimely death, I have heard of a similar case where many of the same dynamics were at work. This LD adult, seriously ill, heavily dependent on medication, and fiercely independent, demanded to be left in charge of his own life and treatment and also died prematurely.

Young LD adults with serious medical problems deserve their independence and should be encouraged to grow. However, to prevent future tragic losses, I believe it essential for the student and those in postsecondary residential settings to agree on the need and to implement a formal plan to monitor and to react appropriately to medical emergencies.

Effective Counseling Techniques for LD Adolescents and Adults in Secondary and Postsecondary Settings

Lynda Price, *University of Minnesota–General College*

ABSTRACT

It is vital that the services provided to LD adolescents and adults emphasize socio-emotional goals as well as academic achievement. This article examines the ramifications of a learning disability by describing five related psychosocial issues. Various pragmatic counseling techniques are then suggested to assist secondary and postsecondary services providers in meeting these complex psychosocial needs. A brief discussion of how the LD service provider can work in tandem with mental health professionals is also included.

Imagine this scene at a local college:

A student comes storming into the counseling office demanding to see a counselor immediately. The secretary at the front desk explains patiently that he should have scheduled an appointment previously. The student continues to berate the secretary loudly until she contacts one of the counseling staff. A counselor agrees to see him.

The student (we'll call him John) shoves a letter at the counselor (we'll call her Ann). John explains angrily that he just received his winter quarter grades. He feels that he was doing okay academically but the letter states that he is now on probation.

After some gentle prodding by Ann, John reveals that he has a learning disability. During both junior and senior high, John received services half-time in

ACKNOWLEDGEMENTS: Special thanks are extended to Susan Aase for her insightful ideas and assistance. I also wish to express my appreciation to William Margolis for his invaluable help in editing this manuscript.

an LD resource room for writing and spelling problems. John also participated sporadically in the high school work-study program, but he says that he never "really got along" with his supervisor.

John did not seek services for his disability after high school graduation because he was "tired of being babied and different than the other guys." He has no contacts at the college except for his brother, "who helps me whenever I get stuck."

After John calms down, he becomes morose and depressed. He complains of headaches that have forced him to quit two different jobs. He also reports recently breaking up with his girlfriend, whom he complains "just doesn't understand him."

John agrees to see Ann again. He never returns for his scheduled appointment. Later, Ann finds out that John was dismissed from the college after spring quarter because of poor attendance and low grades.

If this scenario sounds familiar to you, you may be one of the growing ranks of professionals who are providing services for students with learning disabilities (LD) in a variety of secondary and postsecondary settings. Working with LD adults in higher education is no longer a rare phenomenon. The number of LD students who seek post-high school education has grown dramatically. For example, since 1978, there has been a 10-fold increase in college freshmen with learning disabilities (AHSSPPE, 1986).

The baggage that these students carry into colleges and vocational schools often includes long-term psychosocial problems, as illustrated in the previous vignette. (In this article, the term "psychosocial" refers to the manner in which the LD individual relates to others in the daily environment. A crucial facet of this relationship is how the person copes with and accepts the ramifications of the learning disability.)

The professional who addresses these varied psychosocial issues in most postsecondary institutions is usually someone from the counseling or advising office. As the range of services for students with learning disabilities continues to grow and becomes more sophisticated, the counselor may be an LD specialist.

The focus of this article is to illuminate the psychosocial needs of LD adolescents and adults in secondary and postsecondary educational institutions. I will also postulate ways to categorize these needs and then confront them with a variety of pragmatic counseling techniques.

RATIONALE

Many authors have indicated a strong relationship between learning disabilities and social or psychological disorders. Cohen (1985) stated that "although there are many children with learning problems who are not learning disabled, there are virtually no learning disabled children or adolescents who do not evidence significant psychological conflicts and concerns."

Traditionally, the diverse psychosocial needs of LD individuals have not been met successfully in secondary or postsecondary settings. Ostertag et al. (1986) described services that LD students need that are not typically provided by the California community college system. They include "personal growth and development, learning style awareness, . . . self-help group, self advocacy, . . . disability management and support, . . . (and) family orientation and support." Other LD service providers have emphasized that remediation services should be provided for psychosocial problems as well as academic ones (Cohen, 1984; Gray, 1981; Schreiber & Talpers, 1987; Swan, 1982). As Fisher (1985) emphasized, "The college or university must recognize that the educational program component and the psychosocial ones are equally important and that regular individual and group counseling support academic achievement."

PSYCHOSOCIAL ISSUES OBSERVED WITH LD INDIVIDUALS

The psychosocial issues I will describe can be grouped in the following areas:

- Poor self-concept
- Lack of social skills
- Dependence on others
- Stress and anxiety
- Global negative feelings

Before providing effective support for the psychosocial needs of LD adolescents and adults, one must first examine some of the ramifications of a learning disability upon the student's psychosocial functioning in an academic environment.

Two important caveats should be kept in mind when discussing the psychosocial needs of LD individuals. First, one cannot assume that certain psychosocial characteristics will apply to *all* LD individuals. Neither the currently available research nor my own experiences support such a broad generalization. However, I have observed that many LD people may exhibit one or more of these characteristics over time. Second, it would erroneous (and unfair) to assume that LD individuals have only these negative psychosocial characteristics. Just like all people, learning disabled people have positive qualities that balance their psychosocial difficulties. Attributes such as persistence, dependability, humor, creativity, and artistic talent are examples of strengths that can help LD individuals compensate for their weaknesses.

Self-Concept

Perhaps the most significant psychosocial issue that emerges continually with LD individuals is the lack of a positive self-concept (Cohen, 1984; Frels, 1969; Morse, 1977; Rosenthal, 1973). For instance, Geist and MacGrath (1983) observed that LD students often see themselves as failures and sabotage any successes they achieve (such as successful job interviews). They may also perpetuate a negative self-image because their negative feelings are familiar and comfortable to them.

Smith (1986) expanded this characteristic further by describing problems seen in adulthood (e.g., marriage or job failures, antisocial behavior, and suicide) that may be direct results of a lack of self-confidence and self-respect, and a poor self-concept.

Socialization Skills

As shown in the introduction, another significant psychosocial issue often observed by the LD service provider has frequently been described in the literature as inappropriate or ineffective socialization skills (Alley, Deschler, Clark, Schumaker, & Warner, 1983; Cooper, 1986; Kroll, 1984; Pihl & McLarnon, 1984). For instance, Smith (1986) stated that many LD adults may have not developed important social skills, such as interpreting social clues, a sensitivity to subtle signals, an awareness of vocal tonality, a realization of time, and ability to interpret other people's moods. Cronin and Gerber (1982) further stated that LD adolescents often exhibit poor social skills by inappropriate comments, inappropriate use of social space, difficulty in anticipating the behavior of others, difficulty with changing problem behaviors, difficulty in generalizing from diverse experiences, inflexibility, and a tendency toward impulsivity.

Overdependence

Difficulties with socialization and a poor self-concept can exacerbate another psychosocial issue: overdependence on others (Fisher, 1985; Geist & McGrath, 1983). For example, the LD student may be unable to make simple decisions affecting daily life. Kuncaitus (1986) observed that a learning disability often brings out a wide range of reactions from parents, ranging from overprotection and overcompensation to total detachment. These responses can inhibit the child's natural maturation toward independence. Consequently, the LD individual comes to expect that other significant people (teachers, trusted advisors, friends, or spouses) will continue to be caretakers.

Stress and Anxiety

As illustrated in the introduction, secondary and postsecondary settings can often be very stressful for LD individuals (Worcester, 1981). For example, Frels (1969) observed these signs of anxiety during her work with LD students: (1) physical mannerisms (e.g., tics, red eyes, and bleeding fingernails) and (2) general physical health problems (e.g., long-term colds or coughs). She reported that stress and anxiety came up as a frequent topic of conversation with the students.

Global Negative Feelings

All these psychosocial responses can be significantly influenced by other diverse emotions, which can be loosely categorized as overt negative behaviors and feelings (Frels, 1969; Smith, 1986). Geist and McGrath (1983) described some of their LD students as frustrated, angry, depressed, and dependent. They also asserted that some may be emotionally disturbed and withdrawn. They theorized that LD children may see society as hostile, demanding, and threatening at a very early age. The result may be neurotic defenses or maladaptive behaviors.

In summary, Fisher (1985) has described LD students as

> shy, egocentric, inflexible, immature, and lacking in social skills. They may display poor impulse control, excessive frustration, anxiety, denial, projection, anger, depression, and strong dependency needs or health problems because of the difficulty with an energy drain in coping in school and/or stressful social situations. They misunderstand and are misunderstood. (p. 4)

SUGGESTED TECHNIQUES

All LD students will bring a unique mix of academic and socioemotional strengths and weaknesses into a counselor's office. It is then up to the counselor to help the student come to terms with the joys and sorrows of the past, as well as current academic and social experiences, and create realistic goals for the future. The healing and growth that take place during these counseling sessions can be facilitated by useful techniques that will enrich and strengthen one-to-one sessions with LD students.

Session Goals

Based on the psychosocial needs of the LD student, the counselor should assist the student to:

1. Improve problem-solving abilities
2. Develop goal-setting skills
3. Develop effective communication skills
4. Foster appropriate socialization, if needed
5. Work on assertiveness, if appropriate
6. Provide values clarification
7. Decrease negative behaviors
8. Learn self-monitoring and self-reinforcement
9. Achieve a balanced perspective of personal strengths and weaknesses.

Of all these goals, the last is perhaps the most important. It is the dominant focus of most counseling sessions with learning disabled clients (Geist & McGrath, 1983).

Timing of Sessions

The actual time when sessions take place can be a critical factor. For example, some counselors use regularly scheduled appointments to provide consistency for LD clients. Others agree to see students during a specific crisis in unscheduled sessions. These impromptu sessions may be especially meaningful to some LD students because the counselor can apply therapeutic ideas or techniques while the problem is actually taking place. However, it should also be emphasized to the student that making regular appointments and keeping them is the most advantageous use of both the counselor's and the student's time.

Focus on One Behavior at a Time

It is also helpful for some LD students (especially those with memory problems, sequencing problems, or difficulty transferring ideas from one situation to another) to look at only one behavior or episode at a time during sessions. If one primary goal is worked on per session, the LD student has more time to focus energy and concentrate on a particular problem and then process it fully. When the student thoroughly understands the problem or behavior, he or she can then move successfully on to other areas as needed.

Summarize Each Session

It is very important for the counselor to ask an LD student, especially someone with difficulties in short-term memory, auditory memory, or sequencing, to summarize each session verbally. This clarifies for both the student and counselor what the student has just learned. It also helps the student to see how ideas just learned are related to previous knowledge. The counselor should then write down a clear, practical plan for change with discrete steps for the student to use after the session is finished. This written record again emphasizes for the student how diverse ideas discussed during the session are connected into a cohesive whole.

Self-Monitoring Behaviors

If LD students are indeed to become independent, they must also learn to be responsible for their own self-defeating behaviors. Examples of these negative behaviors are interrupting others, standing too close to someone when talking, and avoiding eye contact.

It is vital that the counselor teach the LD student to monitor his or her own behaviors as much as possible (Clary, 1984). This can be done in many different ways. The LD student can be assigned to count a certain behavior whenever it occurs during a specific length of time (daily, hourly, weekly, etc.) and record it for the counselor. The student can also keep a diary or a narrative log, which is then analyzed during individual sessions.

Some counselors teach the students to develop self-questioning techniques. Other counselors have the student analyze his or her own behaviors after participating in informal role plays during the sessions. Another useful technique, if the institution has access to tape recorders or video cameras, is to record students' typical behavior and then have them review the audio or video tapes of themselves for feedback with the counselor.

Accommodations for Processing Problems

Many adolescents and adults will show a wide range of processing problems as ramifications of their learning disability (Fisher, 1985). Below are suggested compensatory techniques that I have found beneficial for LD students with the following neurological problems:

1. *Auditory memory and auditory retention.* As many traditional one-to-one sessions consist primarily of "talking" with the student (i.e., oral communication), it is important for the counselor to write ideas down or check periodically for the student's level of understanding. It is not unusual for LD individuals to forget or misunderstand critical information if they receive it only through the auditory channel.
2. *Inconsistency.* The overall format of the sessions should be kept as consistent as possible for LD students who exhibit inconsistent behaviors or fluctuating information processing. Beginning and ending the counseling sessions in the same way or meeting in the same environment every time helps the LD individual to concentrate on only the new ideas discussed with the counselor. It is important to keep distractions to a minimum whenever possible.
3. *Sequencing or short-term memory problems.* Extra discussion and repetition of important terms with clear examples may be necessary for students with difficulties in sequencing or short-term memory. Reinforcement is the key to integrate new ideas with material that the student already knows.
4. *Short attention span and impulsivity.* LD students who show impulsive behavior or who have attentional difficulties may initially need individual counseling in short, directed sessions that can then be gradually increased to longer sessions.

Relaxation Activities

In my experience, excessive frustration and stress can significantly influence and disrupt cognitive processing for many LD individuals who already have difficulties in retrieving, understanding, and retaining new knowledge. Relaxation techniques used at the beginning of one-to-one sessions are often helpful for students who come to the counselor's office already overburdened with a great deal of frustration, stress, and anxiety. Once these barriers have been dealt with, the student is free to focus full attention and energy on the goals of the session.

CONSULTATION WITH MENTAL HEALTH PROFESSIONALS

Sometimes an LD student will have serious psychosocial needs that require expertise beyond the skills of an advisor or an LD specialist. Some LD students bring histories of mental health disorders to secondary and postsecondary settings. In fact, Lehtinen and Duman (cited in Kroll, 1984) reported that of the 90 LD adults they studied, 73% had previously received therapy. In addition, 24% of the 90 students were currently receiving therapy from mental health professionals and 11% had terminated their therapy.

It is not unusual for LD students to need significant interventions at some point in their lives with issues such as chemical dependency, child or spouse abuse, severe depression, anxiety attacks, suicide threats, and antisocial or aggressive behaviors. Extra assistance will also be required if the LD student requires medication, or shows characteristics of dysfunctional neurosis, personality disorder, psychosis, or organic brain injuries. In such cases, professionals working with these LD individuals must recognize their own limitations and refer the student for further evaluation or therapeutic services with a qualified psychotherapist as soon as possible.

However, the counselor or LD specialist should also be prepared to function actively as a consultant about learning disabilities for the mental health professional. Unfortunately, many excellent mental health professionals, such as psychologists, psychiatrists, or psychiatric social workers, have little familiarity or experience with learning disabled clients (Huestis & Ryland, 1986).

This lack of knowledge can lead to misunderstandings about learning disabilities by many therapists that will significantly hinder the therapeutic relationship with the LD student. Consequently, the LD specialist should provide information about learning disabilities and the student's particular learning style whenever possible.

SUMMARY

In conclusion, both the professional literature and my own experience clearly illustrate the psychosocial growth that LD students can achieve when effective, appropriate counseling techniques are used in one-to-one sessions in secondary and postsecondary environments.

There is a real need for the services provided to LD adolescents and adults to emphasize psychosocial goals as well as academic achievements. We now know that children with learning disabilities do not "grow out of" their handicap, but will continue to show the ramifications of their disability throughout their lives (Alley et al., 1983; Kroll, 1984).

Consequently, it is vital for LD individuals to have a clear, balanced picture of their own unique strengths and weaknesses. They will especially need assistance in developing a positive self-concept and effective social skills, which can be successfully translated into many facets of adult life.

It is hoped that this information will be thought-provoking for both professionals who are less familiar with LD students and those who are currently on the "front lines" serving this challenging population in secondary and postsecondary settings.

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Establishing Dialogue: An English Professor and a DSS Coordinator Discuss Academic Adjustments—Part 2

George Vincent Goodin, *Associate Professor, English Department, Southern Illinois University–Carbondale*

Sam Goodin, *Director–Disabled Student Services and Veterans Affairs, Indiana University–Bloomington*

Dear Sam, 8 September 1987

I've always found your perspective on universities interesting, and I can agree with much that you and the critics you quote say. Academicians do have trouble staying mindful that their main job is education, much as lawyers can easily forget that their job has something to do with justice and physicians that theirs is to improve health. All of us, including people in your field I presume, can easily get so caught up in the means as to forget the ends we're supposed to serve.

But the last of the critics you cite makes it sound as if teaching would greatly improve if only university professors were not expected to do research. I've taught for the Navy under just those conditions, and I don't think they improve teaching. Instead they reduce it to indoctrination. Whatever the benefits or absurdities of research, however, it isn't an impediment to accommodating disabled students simply because accommodation rarely makes demands on a faculty member's time.

As I promised, I read the additional materials you sent me on learning disabilities and accommodations. Here are some comments on both.

To begin with, much of the material is very tentative, suggesting that research on learning disabilities is just underway. That puts you in a delicate situation. In the absence of clear criteria and reliable tests for learning disabilities, you have a big disadvantage in dealing with faculty members, who after all deal in arguments. Until you get arguments, you will (and perhaps should) get nowhere. You risk seeming to defend people who shouldn't be in universities. I suggest you start devoting a large file to what specific students have had trouble doing or learning and to what those same students have been able to do, the talents which deserve developing.

I liked best the article by Kenneth Dinklage, but obviously he has the problem of LD students in its purest and most manageable form. Harvard University has students with very high verbal and mathematical scores. When a few cannot pass foreign language courses despite immense efforts and nervous breakdowns, it can pretty well waive requirements and still hold up standards. But when similar disabilities show up in those who are not especially gifted or those who haven't had the advantage of expensive prep schools, it is obviously going to be harder to distinguish between the learning disabled and the incompetent.

I gather from this and other research you sent me that you have a debate in your field between those who would define learning disability narrowly and those who would construe it broadly and set lower criteria for it. My own instincts are with the strict constructionists, because I suspect that the opposite approach is used in the mental health field, and I don't like the results. Our friend Evelyn once told me how many counselors worked for the county mental health office, about 40 as I remember. I'm sure there's enough anxiety and unhappiness in the county for 40 people to deal with, but it looks to me, from the outside admittedly, as if "mental health" can be construed widely enough to turn half the population into counselors and the rest into patients, contributing to what Daniel Patrick Moynihan calls the "therapeutic culture." The same danger lies in "learning disabilities." Everyone has trouble learning and can't seem to learn some things, often despite considerable pain. But if people in your field use this fact to try to justify larger and larger bureaucracies of professionals for handling the "clients," you will meet, as you should, even more resistance.

Amid these uncertainties about who and what qualifies as learning disabled, there is bound to be a lot more negotiation than I'd like about what accommodations are appropriate and for whom. I can see why you were led to put out a survey on what special accommodations faculty members might grant LD students, because you're up to your ears in special problems and real people who can't wait for the leisurely pace of research to define learning disabilities better. Nevertheless, I have little faith in questionnaires. I routinely throw them away because they have nothing to do with what people ought to think, only with what they do think, or think they think. It isn't always that clear what people ought to think, but that's what you want to know after all, so I don't see much point in surveys. I have more faith in simple-minded moralism.

Partly as a penance for all the questionnaires I've ignored and partly to fulfill a dream I've long had of replying to one so as to simply tell the truth as I see it instead of blackening squares, I'll respond to the major questions on your survey, especially those which involve composition.

A couple of the accommodations you ask about seem to me worthwhile for all students. Would I "allow learning disabled students to take essay rather than multiple-choice tests"? You bet I would, because I think that multiple-choice tests should be banned. I wish all our students had problems taking them. Would

I "provide a detailed syllabus"? I already do, for everyone, mostly because I think all students have a right to know the shape of a course as a whole and where it is going at any moment.

Would I allow LD students more time to complete tests? Probably, but I'd try to have policies for all students which would make special accommodations unnecessary. I don't believe in timed exams, perhaps because I'm slow-witted myself but also because I think being right is more important than being fast. If LD students are nevertheless rushed, I'm willing to give them all the exam time they need, particularly when I'm not the poor soul who has to proctor the whole thing. Since you and offices such as yours offer proctoring services, I can certainly extend my patience to the limit of yours.

With regard to late homework, I've had every conceivable policy, but I've finally settled on not making a fuss about it. I also try to create a long time between when work is assigned and when it is due. Often I make all the assignments on the syllabus which students receive during the first class meeting. I would consider accommodations if requested, but I would hope that on the matter of late homework, as on other matters, I could make them largely unnecessary by adopting sensible policies toward all students. By the way, I'm surprised at how often the issue of accommodations can profitably direct the attention of faculty to better ways of dealing with other students as well, though I don't know how you can diplomatically point that out to most faculty members.

Would I "use parallel, but lower level, reading materials" or "provide learning disabled students with alternate assignments for extra credit"? No, and I hope other faculty members won't either, but let me be more precise. When you're talking about reading materials, you're talking subject matter. If students have some disability which can legitimately excuse them from taking a course, I have no objection, but within a course which they haven't been excused from, I see no reason for tampering with subject matter except when students are so talented that they need more, not less, difficult work to do. As for "extra credit," that is not even worthy of the high schools where it is so often accepted. As your mother, a much more sympathetic teacher than I, once observed, "Some students want to do greater amounts of mediocre work in order to receive the grades which ought to go with good work."

Many of your questions, unlike these, have to do with the mere mechanics of course taking, which ought not, I think, to present great problems about accommodations. If someone wants to tape what I say for their own use, I have no objection, although I'd rather that all students simply listened carefully, to me and to each other, instead of taking copious notes, which they often do not understand. If they are expected to parrot something on examinations, I suggest that they will usually get better results by parroting the reading assigments rather than their professors. At any rate I don't care how they take notes as long as they don't do so in some disruptive way, such as chiseling them into stone.

To answer fully the questions which most relate to composition, I'd need to know what sort of disability a student had, but I'll have a go at them anyway. Would I consider as an accommodation not penalizing for misspelling, incorrect punctuation, and poor grammar? This question brings up the whole philosophical issue among composition teachers of how much "mechanical" errors should have to do with the grade of a paper. I am more lenient than most on this issue, but even I don't give A's to papers with a lot of mechanical errors.

Beyond that, I base the grade of a paper on content. There is an ancient tradition that rhetoric should be a content-free discipline, but I object to that, as did Socrates. By "counting" on content, I mean that I base the grade of a paper largely on how much sense it makes of what it's talking about. I try to mark down ignorance, confusion, mindless palaver, and bullshit. At the same time, I take into account, as Aristotle advises, that same subjects are harder than others to write about clearly.

Let me be more specific. As I said before, composition classes, as normally taught, have no subject matter or content. For this reason, I think that most of them do not grade on the adequacy of what a paper says to the subject it treats. That's awful, and that's the main reason I'd abolish courses in writing. What I do is to give composition courses content. I have students read something which college students ought to know, something like Plato or Marx for example, and then write their papers about what they read. Then I mark them to a great extent on the adequacy of what they say to what they are talking about. In the real world, people don't usually write just for the hell of it, but in order to be adequate to some subject, to cope with some question. To the extent that composition courses ignore content, they set up for writing a special situation which exists nowhere else, and students get the weird idea that they should write one way for English teachers and another way for everybody else.

If I understand the special problems of LD students properly, it may be that many of their difficulties in composition classes, like some which other students have, stem not from problems with writing as such but from the special sort of thing that a composition class is. They might do much better in a course which emphasized content. For this reason, let me suggest an accommodation which you don't seem to have thought of. I think that most English departments might be happy if you proposed that an LD student substitute for the composition course some other department course which also requires writing. If, for example, a student could write good enough papers to satisfy the departmental Miltonist, it would be foolish to suppose that a course in writing is needed. Other departments, too, by the way, might not consider it an "accommodation" from their point of view to substitute a more-demanding course for a less-demanding one. Speaking of substitute courses, by the way, I see no reason why a good speech course should not substitute for a composition course. Rhetoric, after all, originated in oratory.

The last of your questions that I'll take up here concerns what I would or would not allow proofreaders to do to the papers of LD students. This could depend on the nature of the disability, but I'll tell you what I do now for all students. First, I encourage students to make each other's acquaintance and to talk to each other about the course outside of class. A lot of the education a college or university does has always been accomplished in that way, particularly when the subject of conversation is the intellectual field of the course, rather than the problem of negotiating the course. For assignments completed outside class, students can use any proofreading help they can get from others. Since proofreading affects only formal or mechanical matters, it is not cheating to use it. For assignments completed in class, however, I don't want students to receive any proofreading help. If their problems are solely those which proofreading addresses, their inside-class work will receive B's and their outside work A's.

In the reading material which you and Ron provided me, you didn't have a couple of good articles by people in my field on LD students and composition courses, and I'm sending you copies of them. Alan M. Rose's "Specific Learning Disabilities, Federal Law, and Departments of English" is a very good piece which appeared in the *ADE Bulletin* for Fall 1986. Since this journal is an official voice for the Associations of English Departments, the article's championing of reasonable accommodations should be considered very authoritative by any members of English departments. If I had your job, I'd make enough copies to send one to every composition teacher that I had to deal with.

I'm also sending you Loxterman's article, which Rose references. It deals not with accommodations but with how English departments can help composition teachers to help LD students by providing compensatory material in writing clinics. People in your field could help the students by suggesting that departments get such material and by supporting the modest budget increases needed to pay for it.

Well, this has got pretty long. Now I need to knock this off, make up a couple of syllabuses (you can see that I'm against Latin plurals in English, which you used in your survey), and try to finish putting cabinets and carpets in a bedroom before school starts. If you've got this far, I thank you, as I so often must, for being patient with me. I look forward to hearing from you, and we look forward to seeing you again.

Love, Dad

Dear Dad, October 31, 1987

I found an unforeseen problem in our original plan that this exchange of letters, if published, might stimulate some discussion as to what accommodations are appropriate. It seemed at the time that no civil discussion of this topic between someone in your field and someone in mine was possible unless these two individuals were related. After reading your letter, I realized what should have been obvious from the start, that our views are more similar than dissimilar. For example, I agreed with your rejection of offering "extra credit" or "parallel, but lower level reading materials." I disagree only in finding you overly generous to these two suggestions, which I find laughable. The result of our similar views may be to narrow debate unduly at a time when debate is welcome. Thus I hope that those with different assumptions, which can be cogently defended, will speak up. Now, having finished my disclaimer, I want to give you a very brief summary of what I believe is one of the major areas of disagreement among those of us creating programs to serve students with learning disabilities. My position in these arguments foreshadows much of what I have to say concerning accommodations.

The debate centers around the differences between a comprehensive program and, for lack of a better term, a less than comprehensive program. I read recently that a comprehensive program serving 35 or more students would have five full-time staff members including a coordinator, assistant coordinator, psychologist, coordinator of remediation services, and coordinator of subject-area tutoring. By comparison, my office serves 85 students with learning disabilities, 50 other disabled students, and 300 persons receiving veteran's benefits. Our staff consists of Georgann, a part-time psychologist, 60 student employees, and me. This seems like an important difference, and it is one way I convey to prospective students what we offer and what they might be able to receive at a comprehensive program. It is not, however, what I consider the most important difference. Of more importance is the fact that a student with a learning disability at Indiana is going to have to grow up.

During a visit to one well-respected comprehensive program I was told by its director that when students in her program miss appointments with their tutors a note is sent to their parents. Given that their parents are paying $3000 a year for the services provided, I guess they have a right to know if the services are being used. Recently at Indiana we have begun to provide subject-area tutoring, readers, foreign language waivers, and psychoeducational assessments all at no cost to the student. We do not, however, monitor the students or in any way keep them from flunking out if that is what they choose to do. Were we to establish a more comprehensive program, I am convinced, admittedly on the basis of anecdotal information, that it would not be accepted by a university community such as we have at Indiana and that most of our learning disabled students would not use it. I'm also convinced that in many ways it would not be good for those who did use it, and some research supports my belief that many disabled students are more disabled by the way teachers and parents have treated them than they are by their disability.

My relatively hard-line approach, of holding students responsible when I can humanely do so, carries over to my opinions about academic accommodations. Upon seeing a student with needs, I first look for ways through which s/he can meet them, rather than for ways in which my staff can meet them or instructors can accommodate them.

Now for your letter. You state that in the absence of clear tests and criteria for identifying students with learning disabilities I risk defending students who do not belong in universities and thus "will (and perhaps should) get nowhere." Although we use a sophisticated discrepancy formula created by a blue-ribbon commission studying the entire problem of under- and overdiagnosis, this formula rightly allows us to diagnose students as learning disabled who also have very poor aptitude for college work. It is not our responsibility, nor should it be, to use our testing to determine which students do and do not belong in universities. The protections afforded by Section 504 should not pertain only to bright learning-disabled students. The responsibility for getting students out of universities who do not belong there is yours, and I don't think the accommodations we recommend keep you from being able to do that. Furthermore, universities rarely grapple with difficult questions prior to being directly confronted by them. We have known for years that these students were being identified, provided services, and graduated from the high schools. It was not until they were on our doorsteps that the issues we have been discussing received the limited attention they are now getting. That we will resolve the issues in the absence of such students on our campuses is difficult to imagine.

I don't know what to do in a case where instructors will not make legitimate accommodations. I have developed a lot of subtle and not so subtle methods for "encouraging" them to do the right thing; however, rest easy, academic freedom is alive and well, and considered more important than civil rights in some quarters. I do know that those who profess to believe in the spirit rather than the letter of the law often believe in neither. I also support a greater emphasis on teaching abilities when making promotion and tenure decisions. The students must also take much more responsibility for avoiding classes being taught by that small number of inflexible instructors. Far too few of my students will ask professors prior to registration what accommodation they are willing to make. Those students who do can register early so as to be assured of getting those sections taught by instructors willing to cooperate. This is not a fool-proof system by any means, but I would like to find more ways—again, subtle and not so subtle—to encourage its use.

I should probably now take up the question which began this discussion, the writing problems encountered in composition courses by some students with learning disabilities. Although I too am willing to abandon the standard composition course, we have such a course at Indiana, but students in the College of Arts and Sciences are also required to take an Intensive Writing class. Such courses, offered by a variety of departments, require students to write papers. Whether in the Intensive Writing courses or the Composition courses, students with learning disabilities at Indiana do not usually have much difficulty. Their average grade in the composition class is about a B. This is because they have someone proofread their papers before turnihg them in. They sometimes use tutors provided by our office though many do as I did in college and get romantically involved with someone who can spell. In the worst cases there is a woman named Sue who runs a secretarial service in Bloomington. Sue could read even your handwriting.

Where students with learning disaiblities do encounter problems is with assignments which have to be written in class. For this reason I was quite interested in what you said regarding how you grade papers which have mechanical errors. If your primary interest is the content of the paper, then I do not see why students who make mechanical errors on in-class assignments cannot receive A's. In the interest of all your students who can't spell, including those with learning disabilities, I suggest grading these assignments strictly on content. I understand the need to get some measure of your students' abilities which you can be sure is not a measure of their ability to plagiarize. However, this can be done with an in-class assignment which is not graded or, as you suggested, by allowing them to drop their lowest grade.

I liked your idea of having the students satisfy the departmental Miltonist rather than take a composition course, though I suspect few of my students would take you up on it. This points out another problem brought to my attention by a student of mine now doing graduate work in Computer Science at Northwestern. He pointed out that after he told his instructors about his learning disability he was often required to do above-average work. This student wanted in some classes just to sit back and quietly get a "gentleman's C." It's a situation physically impaired friends of mine have called the "super gimp phenomenon." It is the result of too many made-for-TV movies about persons with disabilities.

According to the OED either "syllabi" or "syllabuses" is correct.

I showed your letter to a couple of my friends from AHSSPPE and they said, with a little bit of envy in their voice, that is must be nice to have a father who take as much interest in my work as you do. I told them it was. Looking forward to hearing from you.

Love, Sam

Disabled but Able to Work: Federal Initiatives in Training Young People with Disabilities in Employment

Dale Brown, *President's Committee on Employment for People with Disabilities (formerly known as President's Committee on Employment of the Handicapped), Washington, DC.*

Editor's Note: *Although the* Journal *does not usually reprint from other sources, the information contained in this article was deemed to be important enough to warrant a deviation from usual policy and format.*

Young people with disabilities will make excellent employees in the future work force. Statistics show that people with disabilities are high-quality producers. According to a recent Harris poll of 921 managers in 921 companies, a large majority of them say disabled employees have good or excellent job performance. Twenty-four percent of top managers rate their disabled employees as excellent; 64% say their job performance is good. Only 5% say it is fair; and 1% call it poor.[1] Thirty-nine percent of line managers say disabled employees are more reliable and have better attendance and punctuality than non-disabled employees.[2]

Yet according to that same poll, two out of three managers say that a lack of qualified applicants is an important reason they have not hired people with disabilities. A March, 1986, Harris survey of 1,000 people with disabilities showed that two out of three disabled people between the ages of 16 and 64 are not working. And two out of three want to work.[3] Given that a majority of managers believe that it is somewhat likely or very likely that their companies will make greater efforts to employ disabled Americans in the next three years,[4] the challenge for the future is training young people with disabilities. Today's youth

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are not competing with the baby boomers born between 1946-64. The number of teenagers and young adults for entry-level work is falling, and they are in demand with employers. This demographic factor also serves to open up the job market for young people with disabilities.

In the United States the public school system is mandated to provide academic and vocational training for youth and takes the lead responsibility for this function. In the past decade young people with disabilities have become a larger part of the public school population and many steps have been taken to better integrate these students.

THE SPECIAL EDUCATION SYSTEM

The Education of the Handicapped Act (EHA) passed in 1975 (PL 94–142) guarantees a free, appropriate public education is available to each eligible child. "Child find" procedures require the state to look for potential pupils with disabilities and offer them an education. Whenever possible, the student is "mainstreamed" or educated in the same classes as their able-bodied peers. In any case, the student is taught in the least restrictive environment. Parents and educators work together to develop an Individualized Education Plan (IEP) for each student.

During the school year 1984–85, 4,363,031 students with disabilities received services through the special education system.[5] Of those, 192,438 of the children were between the ages of 18–21.[6] According to Madeleine C. Will, assistant secretary, Office of Special Education and Rehabilitative Services, "an estimated 250,000–300,000 students leave special education each year."[7] It is important to keep in mind when analyzing these figures that when a student with a disability does not use special education services, that person is not counted as "handicapped." There may be many more students with disabilities in our nation's schools than these numbers indicate.

Assuring that these students with disabilities become ready for jobs has become a recent focus of national policy. Many professionals are involved, so multidisciplinary programming is essential. Fragmentation of services can be problematic, and interagency coordination is a necessary feature of success in helping students make the transition from school to work. Clearly this effort goes beyond special education and involves coordination with vocational education and vocational rehabilitation. The private industry councils of the Job Training Partnership Act also can be a valuable part of the network. The new transition initiative of the Office of Special Education and Rehabilitative Services is working toward this type of interagency coordination. Nearly 40 states have adopted cooperative agreements among special education, vocational education, and vocational rehabilitation.[8]

VOCATIONAL EDUCATION

Training youth for trades that do not require a baccalaureate or advanced degree is the role of vocational education and is for all students. Disabled students always have been part of the programs. In 1984, the Carl D. Perkins Vocational Education Act passed, and several provisions of the law strongly encouraged the involvement of students with disabilities. Ten percent of the federal funds given to the schools for vocational education had to be "set aside" and spent only for the "excess costs" for teaching students with disabilities. State boards of vocational education were required to write assurances in their state plan that handicapped individuals receive equal access in recruitment, enrollment, and placement. A person representing the interests of youth with disabilities must be on the state council on vocational education. Vocational assessment, special services, guidance counseling for career development, and transition planning are available to each young person with a disability. The state plan is required to describe the methods proposed for joint planning and coordination with the private industry councils, state departments of special education, and vocational rehabilitation services.[9]

As a consequence of this act and efforts in the field, vocational education for students with disabilities is improving, but not at the speed one would wish. For example, almost 4% of students in vocational education programs have disabilities.[10] This is the highest proportion ever, but lower than the need would indicate. Vocational assessment is developing, and new techniques for students with disabilities are being researched and utilized. More programs have been established whose goal is to maximize the number of students with disabilities in vocational education. Academic, vocational, and work-study programs are being integrated in the way they are being offered, rather than requiring students to complete specific classes before being on the job.[11]

TRANSITION FROM SCHOOL TO WORK

The increasing emphasis on interagency cooperation has been furthered by a national priority on improving the transition from school to working life for individuals with disabilities by the Office of Special Education and Rehabilitative Services (OSERS). It is OSERS policy to develop coordination and communication among service provider systems to enable students entering adult life to make choices in a knowledgeable manner.

The bridge of transition has three strands, each for a particular segment of the population of young people who have disabilities:[12]

1. Some students with disabilities can cross the bridge on their own, with only the help available to all students. Many of them apply for jobs and are competitively hired or find jobs through parents, work-study opportunities, or employment agencies.
2. Some students with disabilities need time-limited services such as vocational rehabilitation, post-secondary education, on-the-job training, and placement services. In some cases, Individualized Transition Plans (ITPs) for each student describe each step of the transition process and which agency is responsible.

3. Some students, particularly those with severe or multiple disabilities, need ongoing services in order to maintain employment. This is a very small proportion of special education students and consists of people who once resided in institutions or participated in day-treatment programs that included very little productive work or interaction with society. Today, many of them are working in real jobs through a new initiative-supported employment.

SUPPORTED EMPLOYMENT[13]

> Supported employment is (1) for persons who are severely handicapped and for whom employment is unlikely and who, because of their disabilities, need intensive, on-going support to perform in a work setting; (2) conducted in a variety of settings, particularly work sites in which persons without disabilities are employed; and (3) any activity, supervision, or training needed to sustain paid work by persons with disabilities.

Supported employment is developed in each community, based on the needs and resources of the local public and private employers, with input from the involved service agencies. Coordination between industry, rehabilitation, and education is essential to successfully assuring the disabled person has extra training and assistance throughout their time on the job.

For example, frequently a job coach guarantees the employer that a specific job will be done to industry standards. The coach then trains the disabled person in work skills and appropriate behavior. He or she temporarily can replace the disabled person if necessary. Gradually the coach reduces the time spent with the employee until the new employee is working completely independently.

Workers with disabilities might be assigned to work near each other in an "enclave" in an integrated setting. For example, in an electronics factory, eight employees with disabilities might sit at one table. They are paid and evaluated the same way as their fellow employees. They also socialize during lunch and break time.

Sometimes, a "mobile crew," a small group of workers with disabilities under one manager, is set up as a non-profit business. Most mobile crews perform janitorial work, landscaping, and building maintenance. The excess cost for greater supervision or lower productivity by severely disabled workers is paid by public funds.

Each of these models attempts to integrate people with severe disabilities with the general population.

VOCATIONAL REHABILITATION

The government agency mandated to assist people with disabilties to find jobs is Rehabilitation Services Administration. This agency provides federal leadership to the vocational rehabilitation program, which is a nationwide program funded jointly by federal and state governments. More than 225,000 people were rehabilitated to 1985.[14] Local offices exist in and near most cities. The program is for physically and mentally handicapped persons, particularly those with severe disabilities, whose handicaps create serious obstacles to employment. To become eligible the client visits a counselor and is evaluated. Based on that evaluation an individualized written rehabilitation plan is developed that provides the steps through which the client will reach the employment objective. Referral, counseling, guidance, and placement services can be included. Professional staff coordinate the administration of the plan. Some services are funded by public agencies or purchased on a fee-for-service basis. Such services include medical and surgical treatment, hospitalization, prosthetic and orthotic devices, maintenance, vocational training, transportation, reader services and orientation, mobility services for the blind, interpreter services for the deaf, tools, equipment, initial stock for small businesses, telecommunications, sensory or other technological aids, and post-employment services.[15]

Transition from school to work was also a mandated priority of vocational rehabilitation. In 1984, 76,240 people under the age of 24 were rehabilitated out of 213,107 who reported their age (36%); 18,591 (8.7%) were under 18 years of age; 21,724 (10.2%) were 18–19 years of age; and 35,925 (16.9%) were 20–24 years of age.[15] Efforts have been made to increase cooperation between the schools and vocational rehabilitation, so that students are referred directly out of the school system rather than falling between the cracks. 30,439 people were referred to vocational rehabilitation from educational institutions (14.4% of the referrals).[16]

Since the early 1980s, cooperation between rehabilitation and special education has increased and become a priority. In some states schools have vocational rehabilitation counselors on site to work directly with the students. Many federal grants require such cooperation.

JOB TRAINING PARTNERSHIP ACT

The Job Training Partnership Act (JTPA) is the major national employment and training legislation. Its purpose is to "establish programs to prepare youth and unskilled adults for entry into the labor force and to afford job training to those economically disadvantaged individuals and other individuals facing serious barriers to employment, who are in special need of such training to obtain productive employment."[17] Five-hundred-and-ninety-six service delivery areas (local government units with 200,000 or more people) have private industry councils which administer the funds. Private industry councils must have a majority of their members from leadership in private industry. The other members represent education, organized labor, rehabilitation, and other human service entities. Forty percent of the funds must be spent on youth ages 16–21 (Title II-A). Summer training, aimed mostly at school-age youth (14–21) is mandated under Title II-B.

The JTPA is designed for disadvantaged people. A person with a disability, over the age of 22, is considered a family of one, even if they live at home.

Partially as a result of this authority, JTPA has become a major training program for people with disabilities. The President's Committee on Employment of the Handicapped has analyzed data that shows the proportion of youth with disabilities. In Program Year 1986 (July 1, 1985–June 30, 1986), 159,466 people with disabilities successfully completed the various programs. 78,562 of these were youth with disabilities who participated in Summer Training for Youth, and 40,400 young people participated in year-round training programs. The total number of young people is 118,962, which is 11.6% of the total number of youth trained through JTPA.[18]

HIGHER EDUCATION

Many students with disabilities wish to be trained as professionals. They are ready for higher level academic work. Some of these students were so thoroughly integrated into high school that they can enter schools with no special help. Other students with disabilities were trained in regular high school classes with resource room support. A teacher may have helped them in the weak areas, and they might have received specialized tutoring and accommodations such as books on tape or a lowered laboratory table.

Colleges and universities responded positively to the challenge to make their institutions accessible to people with disabilities. In 1974, the Rehabilitation Act was passed. Section 504 of the Act (PL 93–112) reads, "No otherwise qualified handicapped individual in the United States . . . shall, solely by reason of his handicap, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance."

Disabled student service programs were developed on many campuses. Today, there are more than 750 such programs according to Association on Handicapped Student Service Programs (AHSSPPE), which is the professional association of disabled student service organizations on college campuses. These programs usually provide accommodations for the disabilities of the student such as technical aids, assistance with professors, testing, and interpreters for deaf students. They help blind students obtain taped textbooks and reader services. They work toward full accessibility and help with parking.

The federal and private focus on education of college students with disabilities has had results. In 1985, 7.4% of the nation's college freshmen say they have disabilities. In 1978, the figure was 2.6%.[19] This shows a marked improvement in the inclusion of young people with disabilities. However, 8.5% of the population have disabilities that would not preclude them from pursuing a higher education.[20] There is still room for change.

The federal government assists post-secondary education through Higher Education and Adult Training for People with Handicaps (HEATH), a national clearinghouse on post-secondary education for handicapped individuals (800-

54-HEATH). It publishes a newsletter and fact sheets on financial aid, accessibility of classes and buildings, how to choose a college, and a resource directory.

The Office of Special Education Programs (OSEP) establishes annual priorities to improve post-secondary education options for young people who have disabilities. Past initiatives in this program have enabled a number of institutions of higher education to provide innovative services for people with disabilities.

Two post-secondary instititutions for the deaf are funded by the Congress of the United States. Gaulludet University (enrollment 2,200) is a multipurpose education center that serves hearing impaired people around the world through its programs in academics, research, and public service. Its undergraduate program (enrollment 1,650) is the world's only program for the education of primarily deaf students.

National Technical Institute for the Deaf (NTID) at Rochester Institute of Technology (RIT) is the largest post-secondary technical education institute for hearing-impaired and deaf people in the world. As one of the nine colleges at RIT, it educates 1,300 students who take classes at RIT and NTID, while NTID provides support services such as tutors, note recorders, and interpreters. NTID was mandated to counteract the low employment of deaf people in technical fields such as engineering, computers, data processing, architectural drafting, and medical records. It awards associate degrees, certificates, and diplomas in a large number of occupations. Aside from the congressionally-mandated institutes, more than 130 colleges and universities have specialized programs for students who are deaf or hearing impaired.

An interesting federal initiative by the Department of the Navy is a summer internship program at their David Taylor Naval Ship Research and Development Center for students with disabilities, including those who have deafness, blindness, and use wheelchairs. Fifty students were hired last summer, and accessible housing was offered at Gaulludet University. Students were paid competitive wages, according to their number of academic credits. Jobs included drafting, clerical work, engineering, and computer programming.

THE PRESIDENT'S COMMITTEE ON EMPLOYMENT OF THE HANDICAPPED

The President's Committee on Employment of the Handicapped is a small federal agency founded by Executive Order (11480). The mission of the President's Committee is to provide leadership to achieve maximum employment of people with disabilities. This is done by seeking, developing, and providing information and the training necessary to increase levels and quality of employment.

The President's Committee on Employment of the Handicapped has long been a national leader in program development and data gathering for preparing young people with disabilities. For example, the President's Committee gathered and disseminated the data in this report on college freshmen with disabilities and on JTPA. Many publications are available regarding youth with disabilities. . . .

The President's Committee on Employment of the Handicapped recognized early that transition from school to work was a process involving many professionals and has held 2 national and 39 local "Pathways to Employment" conferences that bought all parties together to develop consensus and a blueprint for action for youth with disabilities.

The World at Work Program is a kit that teaches handicapped students the values, rules, and skills of the work place. Teachers, leaders, and advocacy organizations can use it to train groups of students. The first hour is spent listening to a panel of area employers discuss what they expect from the first-time job seeker and jobs available to their occupational areas. During lunch the students meet with individual employers. Then, employers and students review and discuss two videotapes of job interviews and critical incidents that happen on the first two days of the job. This program is a beginning in the process of meeting the pre-work instructional needs of handicapped students.

In Fiscal Year 1988, a conference on the Carl D. Perkins Act will be held in cooperation with the American Vocational Association. The hearing will begin to document the issues remaining to be resolved as this nation seeks to increase vocational education opportunities for people with disabilities. In a separate study the President's Committee will cooperate with a research facility to develop a profile indicating the status of people with disabilities in employment and training programs. A policy and program analysis also will be developed of the current issues, barriers, and concerns facing people with disabilities as they seek post-secondary and other employment preparation programs.

FEDERAL INITIATIVES—A SUMMARY

Various federal programs are bringing young people with disabilities into the work force. The Office of Special Education and Rehabilitative Services has developed a transition initiative that emphasized interagency linkages. The special education system gives each student an academic background and is increasingly stressing vocational and independent living skills. The public and private higher education system has opened its doors to young people with disabilities who wish for professional training. A major national trend is cooperation between all of the agencies helping students with disabilities become ready for work.

Through these programs, and more importantly, the individual initiative of disabled youth and their families, it is hoped that they will be productive Americans contributing to the economic growth of the nation. And through federal, state, local, and individual action, it is hoped that dignity and equality will be reached for all Americans with disabilities. And that all who want to work can work.

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Characterizing Service Delivery People: A Guide on Getting What You Want and Need

Robert J. Gregory, PhD, *Massey University, Palmerston, New Zealand*

Perhaps you, like me, talk frequently with people involved in human, health, education, welfare, social, and other service delivery activities. If so, you have undoubtedly witnessed deep differences in attitudes, behaviors, and thinking as the service deliverers go about their work. Some of these differences were brought home to me recently when a colleague stated that motives of other human service workers were similar to his—he was developing an expanded program over which he had personal control and thought that others were similarly engaged. After thinking about his statement, I realized I disagreed strongly with this assessment. Indeed, many divergent personality styles can be found in service delivery people.

This particular program director was motivated by his desires to build a strong program. I thought about motivating factors of various other people in the service delivery field. Sure enough, several different characterizations emerged quickly. I present these ideas in a somewhat humorous vein, but with sufficient accuracy, I hope, to enable you to understand, predict, and act upon the characterization so as to get what you want and need from service delivery agents.

THE TYPES

1. The *self-made person* is someone whose overwhelming strong sense of personal identity (perhaps based on insecurity) resists loyalty or redirection to any larger grouping. Usually engaged in business or professional pursuits for personal profit, this type of service delivery person, when working in the human service arena, is making points, winning bouquets, and emerging personally victorious.
2. The *professional* is loyal to an organization of people who were similarly trained and who continue to work within the limits and confines of this

group. Usually such training is long and hard, but once completed, the person has invested so much time and effort that any deviance from the traditions and practices of the profession and its methodology is regarded as unwise. Strong loyalty to the profession, regardless of the locale or quality of the specific program, characterizes these people.

3. *Bureaucrats* are members of a public or private, state or national body that transcends particular professional groups and programs. The inherent goal of a bureaucrat is to survive within an organization, while having to carry out the mandated exercises according to the law, rules, or regulations prevalent. Motivated by conformity required by the bureaucracy, these people do not go out of their way to help or to hinder. They simply follow the rules and try to avoid controversy or errors for which they could be blamed. The leadership of the bureaucrat is arbitrary, subject to replacement by shifts in political winds, and incapable of empathizing with what is taking place in others' lives.
4. *Program builders* are concerned about more than their personal fortune and will accrue around them a group of followers, resources, and working practices. The people who support program builders will find in turn that they are supported and the entire group will advance accordingly. These are team players. The program builders do, however, want to maintain personal control over their empire, and will seek to provide high quality services to the extent that it benefits their empire.
5. *Researchers* are interested in the abstract findings of science and will freely set up experiments, ignore personal plights, and disregard individual situations in order to establish scientific principles, write reports, and discover the "truth." They may be interested in unique situations, initial discoveries, and innovative situations, but lose interest in long-term and chronic or complex problems that are less amenable to the scientific approach.
6. *Client-identified workers* are concerned about clients first, second, and third. They may be disloyal to a profession, to a program, and to rules or regulations in their intense effort to side with clients and represent, advocate for, and pursue the interests of clients. Consumers of services can feel good about these workers, though they may have trouble distinguishing them as being different from themselves. Other workers in service delivery may distrust these people because of their single-minded dedication and disinclination to "play the game."

More types can be found, and many service delivery workers have overlapping characteristics made up of several of the types described above.

Strategies

Presumably the various types have emerged from their experiences at workplaces and from various training programs over the years. Possibly all service providers begin from an initial motivation to help other people who are in need. The professionals put their efforts into their training and the methods they were taught. The program builders see that administrative control over a program offers greater opportunity, both for clients and for the director and staff. The researcher may find greater satisfaction in observation, recording, analyzing, discovery, reporting, and writing than in actual service delivery. The client-identified worker is certainly loyal to clients, though in being so may ignore the actual delivery of services. And the bureaucrat is loyal to a large organization of which he or she is not in control, but does take part. Finally, the self-made person seeks gratification financially, psychologically, and socially by delivering services. Clients may be irrelevant to the self-made person except as a means or source of reward.

As a client or consumer of service delivery, you may find that certain strategies help you achieve results from each of these types.

1. The *self-made person* will provide services in which he or she has a personal investment and from which he or she will receive a personal payoff. Give these people praise, pay them well, write letters of thanks to them and theirs, and glorify their attention to you. This will motivate them to provide what you need. Do not expect more than what they can offer.
2. The *bureaucrat* will provide services mandated by the rules and regulations of the state or large organization of which he or she is a part. Do not expect these people to have any feelings towards you. However, if the services delivered were not mandated or were delivered in a way not appropriate under the rules, regulations, or law, then they may become worried and be quick to act. They will play the game in strictly fair and equitable ways. It would pay to know the rules and regulations of the organization. Ask the bureaucrat for a copy of the organizational rules, ask for the name of the immediate superior, and you will receive prompt, courteous, and fair attention. Without this type of clout, however, you may not stand a chance.
3. The *professional* will provide those services that are part of the profession. They will not have feelings towards you, unless the profession requires that they deal with feelings. Then they will guard their own, and focus on your feelings alone. Note the profession well, and be prepared to let the ethics board of the profession know about any lack of service. Find out the appeal methods used to get attention. Be aware of the methodology of the profession, and do not expect more than that.
4. The *program developer* will use you as a consumer of services to bolster his or her need to expand "the program." If you can appear to be unusual, worthy of publicity, or just a good solid statistic, this is grist for the program developer's mill. A letter of thanks for fine service delivery to the newspaper "letters to the editor" is always appreciated. Signed letters that are suitable for granting agencies or for funding campaigns always help. Being a loyal supporter of the empire will keep you on the receiving end of rewards, although you must be careful not to push it too far.

5. *Researchers* are least likely to feel any personal rapport or involvement with consumers. They are likely to use consumers only as statistics, devoid of feelings and regarded as quite inhuman. Comply with their needs and "take what is offered" is probably the best strategy. If you choose to break up the experiment, however, do it in such ways that they are bound to pay attention and recognize that this individual is unique, that the research design is insufficient, or that a new direction in research must be set up.
6. The *client-identified workers* are so busy feeling sympathy, empathy, and pain that they are easy to relate to and are often pleasant to be around. But in trying to give services to others, they may be shunned by service delivery colleagues, especially those who have or control resources. They will advocate for you, but tend to lack resources and access to resources, unfortunately. Use them to get strokes and hugs. In fact, by taking advantage of them you will actually be doing them a favor. If you can call them out after hours, or force them to make exceptions in your favor, they will love you.

CONCLUSION

Consumer strategies and tactics must account for the different types of service delivery personnel. Several characteristic types are discussed in this article, with some ideas for the active and alert consumer to obtain the best possible deal.

Attitude of College Personnel toward Learning Disabled College Students

Mary Lupiani Farrell, *Fairleigh Dickinson University*

Laura D. Harckham, *Rockland Community College*

ABSTRACT

A scale to assess attitude toward learning disabled college students was developed and administered to 21 college faculty and 58 student services staff members, from departments such as admissions, advising, counseling, residence, and financial aid. Analysis revealed significant differences in attitude between college faculty and student services staff, with the latter exhibiting a more positive attitude than faculty. Implications for practice include assigning priority for training to faculty and including student services staff in initial stages of program development.

An increasing number of learning disabled (LD) students have been enrolling in colleges and universities, and this trend is expected to continue (Aksamit, Morris, & Leuenberger, 1987). A number of institutions have either developed special programs for LD students (Vogel, 1982) or have adapted existing programs to better accommodate these students (Mangrum & Strichart, 1983). Many institutions have mounted staff development efforts in recognition of the support required by LD students from both student services personnel and faculty.

Several authors (Miller, McKinley, & Ryan, 1979; Minner & Prater, 1984; Vogel, 1982; Vogel & Adelman, 1980) have addressed the importance of assessing attitude toward LD college students across the broad spectrum of the college community in initial steps of program and staff development. Information on attitudes of college personnel have important implications for planning the allocation of resources for staff development as well as for identifying support networks within college communities.

Attitude toward disabled persons has been the focus of much study (Donaldson, 1980), with research generally indicating that disabled individuals are often received less favorably than their nondisabled counterparts (Salend, Salend, & Yanok, 1985). However, there has been only a limited amount of attitudinal research concerning disabled students on college campuses (Kelly, 1984). Studies have been largely concerned with assessing attitude of faculty (Fonosch, 1979), staff (Kelly, 1984), or nondisabled students (Auvenshine, 1962; Genskow & Maglione, 1965) toward students with a broad range of disabilities and have not specifically focused on learning disabilities.

In the single study published on attitude of college faculty toward LD students, Minner and Prater (1984) reported that initial expectations of college teachers toward LD students were negative. In the only study dealing with the attitudes of both faculty and student services staff, Aksamit, et al. (1987) reported that student services staff had a significantly more positive attitude than faculty members toward LD college students. As the authors indicated, these findings have limited application because information was collected at only one university. As these results have important implications for planning staff development, it is important to verify them by examining their consistency with findings in related areas of research. It is also important to assess attitudes of college personnel groups at other colleges and universities.

A review of the literature indicates that Minner and Prater's (1984) results are consistent with studies in the K to 12 literature that report that regular classroom teachers have strong misconceptions about LD children and that they perceive children with learning disabilities as less desirable than non-LD children (Bryan & McGrady, 1972; Garrett & Crump, 1980; Keogh & Tchir, 1974; Moore & Fine, 1978; Siperstein & Goding, 1985). The K–12 studies have no group directly analogous to student services staff to be used as a basis of predicting their attitude toward LD students. However, if college-level student services staff are viewed as analogous to K–12 central office administrators, one would predict that their attitude toward LD college students would be more favorable than that of faculty. Jamieson (1984) reported that school district staff members who are the most distant from students (e.g., superintendents and central office administrators) expressed more positive attitudes toward mainstreaming handicapped students than did regular classroom teachers.

The purpose of the present study was to compare the attitudes of college personnel groups toward LD college students. In view of the limitation reported by Aksamit et al. (1987), it seemed advisable to replicate that study in another college setting. On the basis of the literature reviewed, it was predicted that student services staff's attitude toward LD college students would be more favorable than that of faculty.

METHOD

Subjects

The faculty group consisted of 21 individuals from a variety of departments across a university's three campuses. The student services staff consisted of 58 individuals with positions at all levels within student services departments such as admissions, counseling, residence life, and financial aid. The groups had been invited to attend workshops on working with LD college students. Attendance was voluntary for both groups.

Measurement

An instrument for assessing attitude toward LD college students was developed for this study because a review of the literature revealed no viable, available scale. Although the frequently used Attitude Toward Disabled Persons Scale (ATDP) assesses attitude toward disabled adults (Yuker, Block, & Campbell, 1966), it was constructed to measure attitude toward a variety of types of disabilities. Because research findings (Moore & Fine, 1978) have shown that teachers exhibit different attitudes toward different categories of disability, use of this scale might have been inappropriate. The scale developed by Aksamit et al. (1987) had not been reported in the literature at the time this study was conducted.

The present instrument (found in the Appendix) consisted of 24 items assessing overall reaction to handicapped people and toward mainstreaming. Participants were asked to check one of four responses to each statement: strongly agree, agree, disagree, strongly disagree. Scores were the sum of the weighted score for each item. (Strongly agree was counted as 4 for positive items and 1 for negative items.)

Split-half reliability was computed for the administration of the instrument to both faculty and student services staff. This computation yielded coefficients for student services staff and faculty of .78 and .75 respectively. A Spearman rank correlation was computed to identify items that correlated below .40 with the whole scale. Five such items were removed from the data set. Split-half reliability was computed for the adapted 19-item instrument, resulting in coefficients of .89 and .77 for staff and faculty, respectively. The results below are reported on the 19-item scale.

Content validity was assumed as a result of the review of the literature. In addition, a draft of the questionnaire was distributed to 12 professionals in special education and postsecondary education to establish face and content validity.

Procedure

The scale was administered to subjects at the beginning of each group's workshop.

Results

The mean attitude score of the student services staff was 60.35, compared with 56.40 for the faculty group. A *t*-test of independent samples used to compare these scores revealed that the student services staff scored significantly higher than the faculty at the .05 level.

Table 1
Comparison of Attitude

	Student Services Staff		Faculty
N	58		21
X	60.35		56.40
SD	5.71		6.33
t value		2.45*	

*$p < .05$

DISCUSSION

Consistent with findings reported by Aksamit et al. (1987), results of this study indicated a significant difference between college faculty and student services staff in attitude toward LD college students, with student services staff members as a group indicating a substantially more favorable attitude than faculty members. The information about differences in attitude between college personnel groups reported by Aksamit et al. (1987) and supported in this study would appear to have important implications for practice. A number of authors have recommended assessing attitude across the college community as an important first step and as a basis for planning staff development. Results of this study suggest that if, as many authors suggest, there is a relationship between understanding disabled students and attitude toward them, priority be given to faculty members when allocating training resources.

Vogel (1982) has reported the need early in program development to identify enthusiastic colleagues from across the university who are willing to serve on a planning team. This study, conducted within the context of a university's initial stages of development of a program for LD students, follows this directive. Results indicate that student services members can be counted upon to play a constructive role in planning teams' efforts. In conjunction with appropriate faculty representation, participation by student services staff from key areas such as admissions, guidance and counseling, academic advisement, residence life, and library services is essential to the critical task of formulating an institutional policy toward the learning disabled college student. This statement, articulated within the framework of the institution's mission statement, can then become a basis for decisions to follow.

There are a number of issues to be addressed through further research. Most importantly, there is a need to document the assumption that attitude of college personnel influences the success of learning disabled college students. Although there are ample data in the K–12 literature on this point and although it appears reasonable to hold this assumption, there is no empirical evidence showing the importance of positive attitudes on the part of the college community for success of learning disabled college students.

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Appendix 1

Attitudes Toward Disabled Students

I.D. ____________________ Department ______________
(last 4 digits of SS#)

Please check the column that best expresses your view of each statement:

	Strongly Agree	Agree	Disagree	Strongly Disagree
1. In general, integrating learning disabled students into college classrooms is a desirable educational practice.				
2. Learning disabled students are often grouchy.				
3. Learning disabled students have the right to be in college.				
4. Most learning disabled students do not cause problems on campus.				
5. Most learning disabled students feel sorry for themselves.				
6. Most learning disabled students will not make it through college.				
7. Learning disabled students are usually as easy to get along with as anyone else.				
8. Learning disabled students are as intelligent as other college students.				
9. Most learning disabled students have personality problems.				
10. The best way to teach learning disabled students is to assign them to classes as a group.				
11. Admitting learning disabled students will require the University to lower its standards.				
12. Most of the problems of learning disabled students are of their own making.				
13. Most learning disabled students will need help with written directions.				
14. The college should not have to make special accommodations to the learning disabled students.				
15. You should not expect too much from learning disabled students.				
16. Excessive work is required by faculty and staff when learning disabled students are admitted to the University.				
17. Most learning disabled students are as happy as non-disabled students.				
18. Learning disabled students should be directed to courses their advisors know are suited to their handicap.				

Appendix 1
Continued

	Strongly Agree	Agree	Disagree	Strongly Disagree
19. If learning disabled students worked harder, they could succeed in learning.				
20. Learning disabled students should not be expected to meet the same standards as other students.				
21. Faculty and staff should make provision for learning disabled students who have writing difficulty to present information orally.				
22. Learning disabled students should be permitted to take untimed admissions and classroom tests.				
23. Learning disabled students could best be served by attending a trade school rather than a college.				
24. Having learning disabled students in college classrooms does not take away from other students.				
25. The University has an obligation to admit learning disabled college students.				
26. Learning disabled students can look forward to leading normal lives.				
27. Learning disabled students can have a normal social life.				
28. Learning disabled students should be permitted to attempt any course they want to pursue.				

COMMENTS:

Career Decision-Making Attitudes of College Students with Learning Disabilities

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ABSTRACT

This study was conducted to determine if career decision-making attitudes would differ between college students with and without diagnosed learning disabilities. The results revealed a significant relationship between having a learning disability and being able to specify an occupation within a chosen career field.

Students with learning disabilities (LD) making the transition from high school to college life are confronted with many challenging obstacles. To date, primary emphasis in assisting LD students with college adjustment has centered on improving their academic performance (Barbaro, 1982; Cordoni, 1982; Vogel, 1987). While academic assistance should be a primary emphasis, preparedness for other college tasks such as deciding upon a career goal must also be addressed by college support personnel.

The need for career decision-making guidance among LD students becomes obvious when their general unpreparedness for college academic life is recognized. It is manifested in an inadequate knowledge of academic subject content, underachievement in basic skills, misunderstanding of their own learning disabilities, vagueness about the demands of college life, and erroneous estimates of personal abilities (Dalke & Schmitt, 1987). These inadequacies can culminate in a lack of mature goal-setting attitudes (Mangrum & Strichart, 1984). Immature goal-setting attitudes may be evident even before LD students begin college. Farmer and Laing (1987) found, for example, that LD students were less likely to plan to enter college full-time than were regularly tested students on the *ACT*. Planning for a career as early as the ninth grade has been recognized as an important variable in predicting adult career satisfaction (Jordaan & Heyde, 1979), and has been included in most measurement devices of career decision-making attitudes (Crites, 1978; Super, Thompson, Lindeman, Jordaan, & Meyer, 1981).

A number of studies examining career decision-making attitudes of LD adolescents, including those studies that reflect the planning aspect, have consistently shown LD youth to be significantly less mature than their non-LD peers (Bingham, 1978, 1980; Fafard & Haubrich, 1981; Kendall, 1981). The primary concern in this study was to determine if LD college students were less mature in their decision-making attitudes than non-LD students. The study also investigated the relationship between career maturity and LD students' career choice status; that is, if there were any differences in career decision-making attitudes between LD and non-LD students on the basis of whether they were decided or undecided about a career choice.

METHOD

The LD group was composed of 35 students from a possible 41 (30 male, 5 female) at a midwestern public university participating in a research and demonstration project designed to evaluate and serve the academic needs of LD college students. All of the 35 LD students who voluntarily agreed to participate in the study had been independently diagnosed as having a learning disability during primary or secondary school. They were re-evaluated for having a learning disability before being accepted into the research project. These 35 LD students had no uncorrected visual or auditory deficits, and none had been diagnosed as having any brain trauma. They ranged in age from 17 to 25 years. The students were in the average to above-average range of intelligence, and most came from a middle class background. The non-LD group of 35 students (22 males, 13 females) was randomly selected from a pool of 236 undergraduates.

INSTRUMENT

The instrument used to assess career maturity attitudes was the *Attitude Scale* of the *Career Maturity Inventory* (CMI) (Crites, 1978). According to Crites, this scale was designed to assess feelings and the disposition of a person toward making a career choice. The 50-item *Screening Form A-2* of the *CMI Attitude Scale* addresses five decision-making concerns: (1) the extent to which a student is decisive about making a career choice; (2) involvement, or the degree to which the student is participating in the process of making a choice; (3) independence, or the extent to which the student relies upon others in the choosing of an occupation; (4) orientation, or the degree to which the student is task- or pleasure-oriented, as well as the value she or he places upon work; and (5) compromise, the extent to which the student is willing to compromise between needs and reality. Internal consistency coefficients of the screening form average about .74. Content validity was determined from a 74% agreement between the scoring key and the responses of expert judges.

DATA ANALYSIS

The research design incorporated a 2 × 3 factorial regression analysis, meaning that there were two independent variables: one with two levels—type of student (LD and non-LD)—and the second with three levels—type of career choice status (undecided, decided, decided but had not selected an occupation within a career field). The *CMI Attitude Scale* served as the dependent variable. As a separate analysis, current grade point averages of the LD group and the non-LD group were compared using a t test (Welkowitz, Ewen, & Cohen, 1982) but no significant differences were found. Both groups reported their own career choice statuses and their respective GPA's on a separate data sheet.

RESULTS

Table 1 presents *CMI Attitude Scale* means with standard deviations for the two groups. An overall means and percentile comparison by type of career choice status is shown, as well as a separate comparison between LD and non-LD groups. A comparison of the combined independent variable means for both LD and non-LD is also included. Table 2 presents regression analysis results and denotes the following.

1. The overall regression model was statistically valid. That is, the type of student (LD vs. non-LD) and career choice status (undecided, decided, and decided but nonoccupational specific) predict career maturity attitudes ($F = 3.97$; $p < .05$) and account for nearly *one-fourth* of the variance ($R = .24$) in predicting career maturity attitudes.
2. Main effects for career choice statuses yielded significance ($F = 4.20$; $p < .05$), as did the type of student main effect ($F = 5.53$; $p < .05$).
3. The type of student by career choice interaction was meaningful but not statistically significant ($F = 2.97$; $p > .05$).

Table 1
Group Means for LD and Non-LD Groups

Career	***n***	**Group Raw Score Means**	**SS***	**Percentile****
Career Choice Status Category: Combined Groups				
Undecided	24	31.46	43	24th
Decided without a specified occupation	20	31.05	43	24th
Decided with a specified occupation	26	34.42	48	42nd
Type of Student: LD and Non-LD				
Learning Disabled	35	31.25	43	24th
Nonlearning Disabled	35	33.70	48	42nd
Career Decidedness Category and Type of Student: LD and Non-LD				
LD/Undecided	12	30.75	41	18th
LD/Decided without an occupation	10	28.27	38	12th
LD/Decided with an occupation	13	34.23	48	42nd
Non-LD/Undecided	12	32.16	44	27th
Non-LD/Decided without an occupation	10	34.44	48	42nd
Non-LD/Decided with an occupation	13	34.61	48	42nd

Note: Maximum score possible = 50
*Standard scores based on *CMI-AS* norms
**Based on *CMI-AS* 12th grade norms

Table 2
Results of Statistical Analysis: Career Choice Status by Type of Student

DEPENDENT VARIABLE: Career Decision-Making Attitudes					
Source of Variance	***DF***	**Sum of Squares**	***R***	***F*-Value**	**Significance**
Regression model	5	388.27014652	.24	3.97	.0035
Error variance	64	1251.001282005			
Corrected total	69	1639.27142857			
Main effects					
Career choice status	2	164.01694139	.10	4.20	.0194
Type of student (LD vs. Non-LD)	1	108.12857143	.06	5.53	.0218
Interaction effect					
Decided x type	2	116.12463370	.07	2.97	.0584

DISCUSSION

This study found a significant relationship between type of student and career choice status when using a criterion measure of career decision-making attitudes known as the *Career Maturity Inventory Attitude Scale*. Two findings from this study are relevant to the recommendation that certain LD students would benefit from career guidance services. These findings are that LD students in this study are significantly less mature in their career decision-making attitudes than their non-LD peers, and that this difference in career decision-making attitudes is primarily attributable to those LD students who have decided upon a career field but have yet to identify an occupational specialty within that field.

The finding of a significantly lower level of maturity in career decision-making attitudes is consistent with similar research conducted with LD adolescents (Bingham, 1978, 1980; Fafard & Haubrich, 1981; Kendall, 1981). One explanation for LD persons consistently scoring low on the *CMI Attitude Scale* is that the scale has been shown to be moderately correlated with verbal ability (Carek, 1965; Williams, 1967). Learning disabled individuals have also been noted for their lower-than-average verbal abilities (Lutey, 1977), though this finding has not been consistently upheld (Blalock & Johnson, 1987). LD students in this study also had a significantly lower mean verbal IQ than performance IQ, as measured by the *Wechsler Adult Intelligence Scale* (WAIS). In citing the studies comparing the *CMI Attitude Scale* to verbal ability, Crites (1978) stated that the studies supporting this correlation "are also consonant with the theoretical expectation that verbally expressed career attitudes should be related to verbal intelligence or aptitude, if it is assumed that attitudes mediate decision-making processes" (p. 17). While it is also commonly held that verbal ability is correlated with doing academically well in school (Salvia & Ysseldyke, 1979), Westbrook (1983) has noted in an analysis of career maturity instruments that: "Theoretically, it should be possible for a student to be a low or average achiever in school work, but have high scores on career maturity measures" (p. 249).

One interpretation of the study findings is that, having a learning disability, with all of its possible negative concomitants, is not sufficient reason alone to foster immature career decision-making attitudes. Based on our analyses, career indecision is a factor underlying the inability to specify an occupation within a chosen career field. This interpretation is supported by evidence that there is an assessable career-indecision factor within most career maturity devices, including the *CMI Attitude Scale* (Westbrook, 1983). Without the benefit of IQ scores for the non-LD group, GPA was used as a substitute for academic ability to show that there were minimal differences in academic success in the two groups. This tended to reduce the possibility that academic ability suppressed the career decision-making attitudes of the LD group. Although not statistically significant, the LD non-specific students did have the lowest mean GP, which leaves room for speculation that a larger sample size may have implicated verbal aptitude as a correlate to depressed attitudes.

In reviewing the *CMI-AS* test items most often answered as "immature" by the LD college students, the category of *CMI-AS* test items that Crites (1978) referred to as a person's "orientation to career choice" appeared to be the most problematical. A statement on the *CMI* protocol sheet informs the student that "career attitude orientation" refers to the degree to which "you are aware of what needs to be done to make a career choice." In the *CMI* manual Crites (1978) stated that the category of test items addressing a person's "orientation to career decision making" refers to the "extent to which [the] individual is task- or pleasure-oriented in his or her attitudes toward work and the values he or she places upon work" (p. 10). Crites cited one item from the *CMI-AS* that typically represents the "orientation to career choice" as: "I have little or no idea of what work will be like" (p. 10). The orientation-to-career-choice related *CMI-AS* test item most often answered as immature by the LD students, but as immature by only one of the 35 non-LD students, was: "I am having difficulty in preparing myself for the work I want to do."

IMPLICATIONS

As a group, the LD college students in this study who were undecided about a career or were decided about a career field but were unable to specify an occupation within that field fell below the 25th percentile of the *CMI-AS* norms in their level of career decision-making attitudes. Crites (1978) has stated that "In general, those in the lowest quarter (at or below the twenty-fifth percentile on the *CMI*) can be considered as possibly delayed or impaired in their career development" (p. 32). While recognizing that this study has limited generalizability, it could be beneficial for LD students entering college to be routinely asked about their career plans. If they are unable to identify a career field or are unclear as to occupations within a career field they are considering, a screening device like the *CMI-AS* could be administered to ascertain the student's level of career maturity. Those students scoring below average should be offered a series of career counseling sessions that would help them to understand the importance those decisions can have on their academic success. The LD student should, for example, know that entering a career major based on "chance factors" rather than careful consideration of his or her own interests, aptitudes, and values can lead to frustration and a higher chance of failure in the major, due to the possibility of a poor match between the demands of the major and student qualifications. The implications for knowing one's career-related interests also should be explained to the student. For example, if a student chooses a college major without much attention to his or her true interests and is frustrated in those courses, he or she may rationalize the poor performance with statements like "I wasn't really interested in this field anyway." Enrollment in a campus career development course designed to help the student find out what his or her more significant career interests, aptitudes, and values are, should be suggested. A final session with a career counselor to formulate a specific career plan should then follow the completion of such a course. A career counseling service within the college and the office of disability services may help to insure that the special needs of students with learning disabilities are addressed. Examples of needs for the LD students being served in college career planning offices would be (1) readers for administering career interest and aptitude test batteries, (2) provision of information to career counselors that a learning disability does not necessarily preclude entrance into technical and professional careers, and (3) opportunities beyond coursework to learn about different college majors.

CONCLUSIONS

Students diagnosed as having learning disabilities often have been described as being "at risk" with respect to completing the rigorous academic requirements of high school and college. However, there is evidence to show that many LD students may also be at risk in knowing how to plan for their future careers.

Consistent with previous studies that have found differences in the career decision-making attitudes between LD and non-LD secondary-school populations, this study also found similar differences within a group of LD college students. The career attitude differences revealed in this study were accounted for by the LD students who were career undecided or were decided but only about their career field. The LD students who were decided about their career field and could specify an occupation within that field were as mature in their career attitudes as their nondisabled peers. No differences in grade point averages were found between LD and non-LD students, overall or when compared in the category of career decidedness; thus ability was removed as a contributing factor to the attitude differences found in the study. Entering college without having given much thought to the career field or occupation one is going to eventually enter may not be particularly problematic for most students, because they are not likely to be harmed, academically, by taking a few courses that are not suited to their interests or abilities. However, for the LD student, whom we already know will face a relatively more difficult time in completing coursework, entering college without a good understanding of his or her abilities, interests, and values, and how to match them with a well thought-out plan of study, may lead to unnecessary frustration and failure. It has been recommended that, along with academic-related screenings for incoming college LD students, attention should be given to their state of career decidedness. Those students found to lack specificity in their career plans should be recommended for career counseling and possibly enrollment in a college career-planning class. This should be followed by a counseling session to formulate a specific plan of study consistent with the student's interests, abilities, and values.

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A Five-Year Analysis of Disabled Student Services in Higher Education

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ABSTRACT

As an increasing number of disabled students exercise their rights to higher education, campus service providers are confronted with the challenge of providing programs and services most needed by this group of students. Providing appropriate services is one way to ensure that campus environments are attitudinally, as well as physically, accessible. Systematic research has been suggested as one means of assessing the needs of disabled students, the programs that are currently offered, and the ways in which service delivery could be improved to become increasingly responsive. This study was undertaken to provide information about the services offered to disabled students over the past 5 years on college and university campuses nationwide. Data were provided by the disabled student services data bank sponsored by the Association on Handicapped Student Service Programs in Postsecondary Education (AHSSPPE). The results of the study and their implications for service providers are discussed.

The needs of disabled students on college campuses have become a national concern in the last decade. It has been estimated that approximately 35 million United States residents have various physical, mental, and emotional disabilities (McBee, 1982). Since the passage of the Rehabilitation Act of 1973, many disabled people in this country have exercised their rights to higher education (Scales, 1986). As more students with disabilities enter colleges and universities, campus service providers are confronted with the challenge of providing programs and services that are most useful to this group to help ensure that higher education environments are attitudinally, as well as physically, accessible. Disabled students on campus represent a diverse group, with disabilities ranging from physical handicaps to learning disabilities, creating the need for specialized services to meet their varied needs (Patterson, Sedlacek, & Scales, 1988).

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This diversity would suggest that organizational units responsible for disabled student services should be diverse and multifaceted. For example, McBee (1982) has observed that, in addition to the structural and architectural changes that have been federally mandated to accommodate access for disabled students, colleges and universities should also provide (a) pre-admission counseling and orientation, (b) training for faculty and staff to aid their work with students with various disabilities, (c) academic support services to students, and (d) career placement assistance upon graduation. These suggested services can be coordinated by the disabled student office on each college and university campus, but additional services can appropriately be offered by other campus units as well.

Current research findings suggest that, while higher education institutions have made considerable progress in removing physical barriers for disabled students, fewer changes have occurred in the area of support services. In a survey of 155 colleges, Marion and Iovacchini (1983) found that college administrators were making a concerted effort to respond to the regulations of the Rehabilitation Act of 1973. However, other researchers (Warnath & Dunnington, 1981) have suggested that, while some physical changes have been made to assist disabled people on campus, additional changes are necessary. Architectural alteration constitutes only one step toward institutional accessibility, and additional changes in the area of support services are also necessary. For example, Scales (1986) has noted that the concept of accessibility includes the elimination of policy barriers and the provision of appropriate services such as readers and interpreters.

These studies suggest the importance of examining program, staff, and student characteristics of colleges and universities that provide services to disabled students in order to understand national trends and developments. Although studies have reported administrative support for the admission of disabled students to higher education institutions (Newman, 1976), the types of services that have been available to these students once they are admitted are not clear and have not been described systematically. In his report to the U.S. House of Representatives, Scales (1986) recommended that studies assessing the "numbers, age levels, types of handicapping conditions and services required for disabled students in postsecondary education be established as a priority for effectively evaluating/improving the current level and type of services available" (p. 30). Currently, no systematic research has been conducted to assess the availability, range, and location of services for students in higher education. Resource lists, which have been compiled periodically and include surveys of available services from a variety of institutions, have been criticized on the basis that they are outdated as quickly as they are published. In addition, these surveys are often sent blindly to Student Affairs offices, which may not represent the best source of information about campus services for disabled students (Jarrow, 1987).

The purpose of this article is to present data collected over 5 years concerning the programs, services, and types of disabilities of students attending colleges and universities nationwide. These data are part of an ongoing data bank established in 1982 to act as an information resource for disabled student service units nationwide as they planned programs, services, and annual budgets. The data bank, sponsored by the Association on Handicapped Student Service Programs in Postsecondary Education (AHSSPPE), represents colleges and universities that are members of this organization.

INSTITUTIONS

Surveys were distributed to the disabled student services (DSS) unit in each AHSSPPE institution that volunteered to participate in the data bank. Participation was renewed yearly; thus, membership in the data bank varied across the 5-year reporting period. Due to this sample fluctuation, the results have been stratified into large (total enrollment of 10,000 or more) and small (enrollment of fewer than 10,000) institutions in order to minimize misleading results.

INSTRUMENT

Information about disabled students served and services offered by the DSS offices was solicited through an annual survey. Various characteristics of the DSS unit, including size, staff characteristics, and funding, were also assessed.

RESULTS

Institutional Characteristics

For all 5 reporting years, most of the large schools were 4-year public universities and colleges, while relatively more 2-year schools were in the small school sample.

Funding and Staffing

On the average, the disabled student services unit at small schools reported a larger average budget than did large institutions over the 5-year period. The mean budget across 5 years for small institutions was $129,000, while the mean budget for large schools was $122,000. These reported budget amounts incorporate all expenses, including staffing and programming. Budgets for both large and small institutions showed a decrease in the 1984–85 and the 1985–86 school years, with a subsequent increase in 1986–87. For those 2 years only, large institutions reported a larger mean budget than did small institutions (see Table 1). Table 1 also illustrates that the median budget was consistently smaller than the mean budget for large and small schools in all years. This suggests a skewed distribution, with a few schools having relatively large budgets, but with most having budgets considerably less than the mean.

Despite these funding trends, absolute numbers of staff members employed by DSS offices were similar across institutional types. However, the mean educational level of employees differed somewhat, with large schools employing greater numbers of doctoral-level staff and graduate assistants, and small colleges and universities more commonly employing masters-level staff and interns.

Disabled Student Population

Overall, large institutions reported that larger numbers of disabled students were registered with their DSS offices. For large institutions, the range of means of disabled students receiving services was 203–223. For small colleges and universities, this range was 95–175. Small institutions showed a gradual decrease in numbers of students registered with their DSS units, while large institutions showed a stable pattern of numbers of students served over the 5-year period.

Specifically, both large and small schools showed a decrease in the number of mobility-impaired students registered with their DSS offices across the 5-year period. This trend was particularly marked for small institutions. Another trend for both large and small institutions was the increasing number of learning disabled students registered with DSS units. While occurring in both large and small institutions, large institutions reported the most marked trend, with the mean number of registered learning disabled students increasing from 26 in 1982 to 57 in 1987.

Services Offered

Despite the finding that total DSS budgets were relatively small, the scope of services provided to disabled students was quite expansive and diverse. There

Table 1
Mean Budget Figures: Large and Small Institutions

	Large		Small	
	Mean	**Median**	**Mean**	**Median**
1982–83	$136,000	$76,000	$218,000	$150,000
1983–84	126,000	69,000	157,000	63,000
1984–85	106,000	71,000	90,000	50,000
1985–86	104,000	74,000	80,000	43,000
1986–87	135,000	60,000	98,000	75,000

*All reported figures are rounded to the nearest thousand.

was little difference in the range or type of services offered by DSS units in the large and small schools, so the results will be presented in combined form. Institutions offered services commensurate with McBee's (1982) recommendations of counseling and orientation, training for faculty and staff (accomplished through consultation with on-campus organizations and faculty), and academic support services to students (such as interpreters for the hearing impaired, note-taking assistance, and test and quiz administration). Other services that were commonly offered included special orientation, priority registration, and counseling. Services that were less commonly offered included the provision of personal care attendants, transportation, and equipment repair services. However, it is less clear from the results of this study if McBee's recommendation of career placement assistance was met by schools in the sample; future researchers might wish to assess this variable. It might prove necessary to assess the services provided by other campus units to determine if these services are offered.

Services to learning disabled students showed a more moderate range and scope. Commonly offered services included tape ordering, test and quiz administration, and counseling. These services showed a small but clear increase in availability across the 5 years under study. Testing and remedial services, support groups, and the editing of written work were less commonly offered to learning disabled students in large and small institutions. The frequency with which institutions reported offering these latter services showed little change across the 5-year period.

DISCUSSION

The data presented here, representing 5 years of data collection of a nationwide sample of colleges and universities, provides a picture of disabled students in higher education and the variety of programs and services that have been available to them in the last 5 years.

Services for disabled students in general showed a wide range and variety. The types of services offered meet the recommendations set forth by McBee (1982), who suggested that services for disabled students should include academic support, faculty and staff training and education, pre-admission counseling and orientation, and career placement assistance upon graduation. It appears that the first three recommendations are being met by disabled student service providers in higher education nationwide. The services that were most commonly available to disabled students included consultation to faculty and staff, counseling, academic support in the form of tutoring, note-taking services, interpreters for hearing-impaired students, test and quiz administration, and ordering of taped texts. Additional research is necessary to determine the frequency with which institutions provide career placement assistance.

An important trend found in this study is the increasing number of learning disabled students registered with DSS offices on college and university campusess. This trend is likely to continue as more individuals take advantage of testing, diagnostic, and remedial services that are becoming increasingly available to them. While the number of learning disabled students on college campuses is increasing, the number of mobility-impaired students receiving services decreased. Together these trends represent a challenge for campus disabled student service provider systems, which must be flexible enough to provide appropriate services for the changing population of students who perceive a need for specialized services. This is a particular challenge at a time when DSS budgets have remained relatively stable.

However, while the number of learning disabled students registered with DSS service providers is increasing on campuses nationwide, only some of the services offered to this group of students showed a concurrent increase. Typically offered services included ordering of taped texts, test and quiz administration, note-taking services, and counseling. These services showed an increase in availability across the 5-year period under study. Testing and diagnosis, remedial services, and editing of written work were less commonly offered and remained stable in their frequency of availability. Of course, learning disabled students represent but one group of disabled students, but their increased numbers on college and university campuses suggest that their needs should be addressed more systematically. As the number of learning disabled students seeking services on campuses continues to rise, it will be increasingly important to assess the types of services needed and those currently offered to these students. Scales (1986) has commented that the type of research presented here has become critical to service providers who must make decisions concerning programs and services to disabled students.

A limitation to the study may be that only AHSSPPE schools were surveyed. Thus, there may have been an overestimation of the range and types of services available in universities and colleges in general. Additional research with a more representative sample of institutions is necessary before these results can be generalized to other institutions. A related limitation of this study is the fluctuating nature of the sample. Although stratification of the results by large and small institutions may help, caution should be employed when making firm conclusions based on these data. Future longitudinal research should make an effort to select a representative sample and follow it for the duration of the study.

Finally, although the data bank sponsored by AHSSPPE is still quite new, it provides an excellent source of information concerning the programs and services offered to disabled students in higher education institutions nationwide. The data bank has been utilized as a source of information for DSS programs when planning budgets, programs, and services and has served as a communicative link between peer institutions. The data bank can best be updated and improved by the involvement of DSS programs that contribute data to the bank. In return, the data bank provides a wealth of information to its participants. For additional information about participating in the data bank, contact William Scales at the University of Maryland, College Park, Office of Disabled Student Services.

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speak out

A True Tale

Cynthia Kyle Dewar, *Wellesley, Massachusetts*

EDITOR'S NOTE: The following essay was written by a student as part of her application to the University of Vermont. In addition to being charming and creative, it gives a student's perspective on dealing with a learning disability.

Once upon a time in a land not very far away there lived a lovely, young woman named Cyntherella. Enthusiastic, self-confident, and effervescent, she eagerly encountered life, all smiles, hopes and dreams. But, one day, all of a sudden. . . .

Seemingly abandoned by her previous skills, she found herself in the domain of Madame L. Disability where Francaise and Biology were always hounding her. These three tormented poor Cyntherella, demanding work, long and hard, for no rewards whatsoever.

Bio browbeat the young girl with seemingly impossible tasks. Bio seemed decent enough with Cyntherella's lab work and experiments, but brutal when it came to memorization and tests. Her expectations seemed unattainable. No matter how much time or effort Cyntherella invested, Bio was Critical and Demeaning.

Nastier and more difficult by far, however, was the older Fran. She was indeed Cyntherella's nemesis. For three years Cyntherella grappled with Fran's relentless harassment. Cyntherella would study all night, but it was still not enough, never so much as a "Si." In speaking with Fran, Cyntherella found the conversations pleasant enough, but always there was the new vocabulary to contend with just as Cyntherella had mastered the old.

Now, although Cyntherella tried to love Fran and Bio and worked very hard to please them, the vicious Madame L.D. always came between them. Her cruelty and despotism seemed to sap the young maiden's energy. Madame L.D. seemed the root of all evil in Cyntherella's life. Whatever tasks she attempted, there was Madame in her way, a nuisance, a bother, a pest, a disturbance. Cyntherella tried waking at night to work, and even rose early in the morning, but to no avail. Madame was always there like a shadow of doom and despair. For two long years the double demons and Madame L.D. thwarted her every move through the halls of Wellesley High School.

Nevertheless, in this discouraging world, there was one area that gave Cyntherella great pleasure, a source of strength that did not ebb and was never affected by Madame L.D.: Cyntherella's painting. Her artwork was always successful and she turned to it to restore her feelings of confidence and joy after her apparently endless struggles with Fran and Bio. Here she was free from the clutches of the three foes.

One day, a large white envelope arrived in the mail addressed to Cyntherella. The household was astir. It was an application to the palace of wisdom. Cyntherella was thrilled until the three started giggling, "You, go to the palace of wisdom?"

"Don't be absurd!"

"Your work is not good enough!"

"You are too slow!" jibed Madame L.D. in a cynical, emphatic voice, continuing to laugh mercilessly. Poor Cyntherella . . . Would she never reach the groves of academe? She ran to her room, threw herself on her books and sobbed and sobbed inconsolably. She wept and fretted until she was so exhausted that she fell asleep. Here's where the magic began. . . .

J. Choney, a mustachioed, salt and peppered Wizard (really a teacher) appeared, explaining to our young heroine that she was not the only one oppressed by Madame L.D. and the gruesome twosome. He assured her that she was not slow, stupid, or lazy and that it was simply the cruel Madame who was hindering her progress.

"You can learn how to work *with* Madame L.D. so that she will not be such a burden. You have the talent and the intelligence to venture on; you will be able to file an application to the palace of wisdom," quoth the Wizard.

Little by little, Cyntherella learned. She developed new strategies and soon found the struggles easier. Cyntherella's confidence grew, her spirits soared, her desire for challenge mushroomed. She began to trust her capacity for accomplishment. Using the ways of the Wizard, Cyntherella discovered more and more time available for her true loves, Art and Creativity. She began designing and painting shirts for a local store, Different Drummer, and she established a business called PRINTS CHARMING. Soon many buyers were clamoring for her designs. Madame L.D. was foiled. . . . She was losing power over Cyntherella as PRINTS CHARMING grew in popularity. Everyone loved the PRINTS!

And so, our young entrepreneur decided that it was high time she filed an application. With the help of the Wizard, the PRINTS, and her new lease on learning, Cyntherella is convinced that she will be successful and gain admittance to the palace of wisdom and to a happy, productive life ever after.

Career Counseling and Women with Disabilities: A Research Project to Facilitate Higher Learning

Catherine Marshall, *University of Northern Colorado*

Rosemary Kreston, *Colorado State University*

Educators and career counselors at all educational levels must become more aware of the problems faced by girls and women with disabilities in pursuing their education. In her address entitled "Women: All are disabled but some more than others," Dr. Nora Kinzer (1986) noted that more money is spent on diets and cosmetics in the United States than on public education. While this observation alone may not be cause for alarm, it becomes disconcerting given that, according to the report *Disabled Women in America* (Bowe, 1985), 1 out of every 6 disabled women has less than 8 years of formal education, compared to 1 out of every 28 nondisabled women. Furthermore, women with disabilities are only half as likely as nondisabled women to have at least some college education.

Women with disabilities have reported believing that their career opportunities were limited by the education that they received (Atkins, 1982). A review of the literature regarding the education, training, and employment of women with disabilities has indicated that "women as a group have received differential treatment in the field of rehabilitation. They tend to have lower employment rates, make less money, and are more likely to end up in low status, low advancement jobs than disabled men" (Lesh & Marshall, 1983, p. 21). In a more recent study, Danek and Lawrence (1985) found that through rehabilitation state agencies, "female clients are overwhelmingly employed in clerical and sales positions and as homemakers; male clients are more concentrated in professional, technical, and managerial positions" (p. 17).

Change must involve the systems and the institutions of education. Educators, in particular, must become more aware of their influence as informal career counselors. For example, educators who advise women with disabilities about possible majors must examine what role they play in omitting reference to nontraditional occupational choices and alternatives to dealing with a disability. At a recent workshop addressing the concerns of women with disabilities in higher education, "university-based persons in counseling or supportive capacities were identified as failing to explore accommodation alternatives for a disability" (Davis & Marshall, 1987, p. 40). Federal law requires that children with disabilities receive a free, appropriate, public education. It is clearly questionable as to whether these children have access to an appropriate higher education.

A research project charged with investigating the career counseling needs of girls and women with disabilities is currently underway in northern Colorado. Seed money provided by the American Association for Counseling and Development (AACD), has enabled researchers to begin work, with focus on the following objectives:

1. Surveying the concerns of 100 women with disabilities about the career counseling (formal or informal) they are receiving in both secondary and postsecondary educational settings.
2. Providing for these women a career counseling workshop based on needs identified through the survey. The survey includes both a questionnaire and an interview.
3. Familiarizing the faculty of at least four participating institutions with the research findings.

Persons interested in assisting the researchers in expanding this project by distributing the questionnaire in their localities are asked to contact the senior author.

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Competency Testing and Disabled Students: One University's Experience

Editor's Note: *At the request of the author, neither author's name nor university affiliation are being published. Although this is not the usual policy of the* Journal of Postsecondary Education and Disability, *the information contained in the article is timely and thought-provoking enough to warrant deviation. Readers who wish to correspond with the author may do so through the editor.*

ABSTRACT

Universities frequently face a need to substantiate the quality of their students' education. One common response has been to adopt a norm-referenced, commercially available standardized test as an objective measure of educational competence. Minimum "cut scores" are then established and a policy is adopted that at least these minimum scores must be obtained as a condition for graduation.

This study compared the competency testing results of a group of 44 disabled students to the results of a control group of 44 students. Data suggest that the proportion of disabled students who passed the competency test was lower, that disabled students achieved lower scores, that appropriate accommodation of disabilities increased test scores, and that cumulative grade point averages were not different. Included is a discussion of competency testing issues and results data, a set of recommendations to the university, and some hypotheses concerning the differences in scores between the disabled and control groups.

Universities frequently need to substantiate the quality of their students' education. The desire to maintain a high reputation among potential students and employers of graduates, to meet accountability pressures from federal and state politicians and legislative bodies, and to receive continued financial support from alumni and corporate America all push for objective demonstrations of educational excellence. One common response has been to adopt a norm-referenced, commercially available standardized test as an objective measure of educational competency. Minimum "cut scores" are then established and a policy is adopted that at least these minimum scores must be obtained as a condition for graduation.

Measuring educational competency with standardized tests seems on the surface to be a straightforward, fairly simple choice among alternatives. This university made such a decision and chose the Pre-Professional Skills Test (PPST) marketed by the Educational Testing Service (ETS). The PPST has three subtests: reading, writing, and math. ETS says that the use of standardized tests to evaluate competency is not justified unless it is independently validated by a comparison to known criteria (Preer, 1983). The PPST's *Bulletin Of Information* (1988–89) also states that "Validity information must be collected and documented by each test user, for each use of the tests" (p. 12).

Although the use of minimal competency testing requirements for graduation does not violate either The Education For All Handicapped Children Act or Section 504 of the Rehabilitation Act of 1973 (*Brookhart v. Illinois State Board of Education*, 1983), it does present some questions as it is applied to students with disabilities. Since this university's selection of the PPST and the establishment of cut scores in May, 1984, questions have been raised regarding the performance of disabled students compared to the whole student body. More specifically, questions regarding the adequacy of test accommodations, test bias, passing and failure rates, and relative degree of difficulty are being asked by faculty, the Disabled Student Services office, and disabled students themselves. Questions such as these surface in part because there are no cassette versions of the PPST (large-print and braille test forms are available). A further problem is that the university does not participate in making decisions about test accommodations for disabled students.

In an effort to address some of these issues, a study was conducted to compare scores of disabled and nondisabled students on the PPST.

METHOD

Subjects

The subjects of this study were 44 disabled students and a control group of 44 students representative of the entire student body. The disabled students were a cohort group consisting of all disabled students for whom PPST results data could be obtained through December 1987. The control group was chosen using random sampling of the entire student body with replacement. The two groups were matched on sex, number, and graduation status.

Procedure

University records of PPST scores, cumulative grade point averages, and ACT scores were gathered and used in the results data for each group. Whenever possible, control group data were compared to other known university-wide data to verify their representativeness of the whole student body. No statistically significant differences were noted. A one-tailed *t* test for independent samples was the statistical procedure used for all analyses unless otherwise indicated.

RESULTS

Competency testing performance data for disabled students and controls are summarized in Table 1. The data in Table 1 reflect passage and failure rates after repeated testing. Results showed that disabled students had a lower passing rate than the control group for the PPST taken as a whole and on the reading and math subtests. Also, a larger proportion of disabled students who passed the reading and math subtests had to take them more times in order to pass. The mean test scores of all students are given in Table 2.

Table 1
Percentage of Students Passing the PPST

	Whole Exam (%)		Pass Rates # by Test (%)			% Taking the Test More Than Once to Pass		
	Pass	Fail	Reading	Writing	Math	Reading	Writing	Math
Controls	80	20	86	86	95	18	11	11
Disabled	64	36	70	77	77	36	20	25
Differences	16*	-16*	16*	9	18*	-18*	-9	-14*
z	1.67	1.67	1.84	1.10	2.47	1.91	1.15	1.71

*$p < .05$
#Eventual pass rates given repeated testing occasions

Table 2
Mean Test Scores

	Reading	Math	Writing
1. Controls	175.79	178.13	174.96
2. Disabled—all	172.08	173.46	171.86
3. Disabled—only those receiving accommodations	169.56	171.19	171.13
Differences			
1–2	3.71*	4.67*	3.10*
1–3	6.23*	6.94*	3.83*
2–3	2.52	2.27	0.73
t scores			
1–2	2.52	3.09	3.46
1–3	3.89	2.40	2.80
2–3	1.04	0.95	0.53

*$p < .05$

The data in Table 2 show higher scores for controls on all three subtests than for disabled students as a whole or the subgroup of disabled students who received test accommodations such as readers for visually impaired students or additional time for students with a physical impairment that interferes with test taking. On all three subtests the entire group of disabled students received scores similar to those of disabled students receiving test accommodations.

Another issue dealing with the provision of test accommodations is related to the effect of accommodations on test scores. With this in mind, disabled students were identified who took a particular subtest both with and without accommodations on separate testing occasions. These effects are summarized in Table 3.

Accommodations for disabled students who needed and received them significantly increased their scores on the math and writing subtests over scores received on testing occasions when these same students took the tests without needed accommodations. However, these results must be interpreted very tentatively due to the observational nature of the study and lack of random sampling with this subgroup.

Cumulative grade point averages were compared in an attempt to clarify the hypothesis that perhaps the differences noted might be due to differences in academic achievement at the university. A statistical analysis found no significant difference in the cumulative grade point averages of disabled students and the control group.

Another hypothesis explored in an attempt to explain the differences noted in Tables 1 and 2 related to pre-university scholastic achievement. Specifically, was relatively weak pre-university scholastic achievement (which could be general, such as graduating from high school with a weak academic curriculum, or individualized, such as weak reading skills) associated with poorer performance on the PPST? In order to test this hypothesis ACT scores were used as a measure of pre-university scholastic achievement and the Composite score chosen as the one most representative overall score. Mean ACT scores were collected for all students, as shown in Table 4.

These data verified that the controls had higher-level pre-university scholastic achievement than disabled students, as measured by ACT scores. The controls also scored higher on the PPST.

An analysis of covariance was then carried out to statistically adjust the pre-university scholastic achievement advantage enjoyed by the controls (as represented

Table 3

Mean Scores of Students Receiving or Not Receiving Accommodations

	Reading	**Math**	**Writing**
With accommodations	169.56	171.19	171.13
Without accommodations	166.83	165.81	168.27
Differences	2.72	5.38*	2.86*
n	3	7	5
t	1.66	2.99	2.17

*$p < .05$ for dependent samples

Table 4
Mean ACT Scores

	English	Math	Social Science	Natural Science	Composite
Controls	18.2	16.3	17.4	20.3	18.3
Disabled	14.4	11.4	12.0	17.5	13.9
Difference	3.8*	4.9*	5.4*	2.8*	4.4*
t	2.46	2.63	3.06	1.71	3.11

*$p < .05$

by the ACT Composite scores). This analysis indicated that there were no differences between the PPST subtest scores for disabled students and controls once the variations represented by the ACT Composite scores were adjusted. The analysis of covariance also failed to show a difference between the cumulative grade point averages of the disabled students and controls after the differences in pre-university scholastic achievement were adjusted.

Perhaps, then, many disabled students are a part of a yet larger group of students whose abilities to perform competently, over time, and on varied criteria (as is characteristic of academic course requirements and in the world of work) are not validly assessed by the PPST. One hypothesis is that students who score less well on the ACT due to lower scholastic aptitude will have attenuated scores on the PPST due solely to their common measurement of scholastic aptitude. The measurement of scholastic aptitude by the PPST may then be considered a confounding factor in the measurement of educational competency or past academic achievement. With this in mind, any initial differences in scholastic aptitude between students would need to be factored out in order to increase the comparability of all scores. As previously noted, when the differences in PPST scores between the disabled students and controls as represented by the ACT Composite scores were adjusted, no difference in PPST scores remained. If PPST scores are lower for students with relatively less visual-perceptual scholastic aptitude, students with reading-related learning disabilities and hearing impairments should be most adversely affected.

The data in Table 5 are consistent with the hypothesis that students whose disabilities most interfere with the development of visual-perceptual scholastic ap-

Table 5
PPST Pass/Fail Rates of Persons with Various Disabilities

Disability	Pass (%)	Fail (%)	*n*
Hearing	50	50	2
Physical	85	15	20
Visual	67	33	3
Learning	33	67	6
Brain damage	100	0	2
Other	82	18	11

titudes perform less well on the PPST. One difficulty, though, is to know just how to adjust an individual's test scores based on dissimilar performance by a subpopulation or to take unique disabling characteristics into account. A partial solution to this difficulty has been this university's willingness to grant test waivers on an individual basis to disabled and international students.

Inferences

The data yielded the following inferences.

1. The proportion of disabled students who passed the PPST was lower than that of the controls, and those disabled students who passed did so with lower scores and required a greater number of testing trials.
2. Controls scored higher on all three PPST subtests than disabled students.
3. Disabled students taking the PPST initially without accommodations (their choice) and then later with accommodations received the lowest test scores. This subgroup received the lowest test scores. This subgroup tended to receive higher test scores when accommodations were provided. There was no evidence that ETS denied appropriate accommodations to disabled students, nor that the university failed to follow through or adequately provide the accommodations requested by ETS.
4. Mean ACT scores were higher for controls than for disabled students.
5. Higher ACT Composite scores were associated with better performance on the PPST, and vice versa.
6. No differences between the cumulative grade point averages of the disabled students and controls were noted either before or after pre-university scholastic achievement (as represented by the ACT Composite scores) was adjusted.
7. Evidently the PPST was measuring a domain of characteristics or skills similar to those measured by the ACT Composite scores, considering the correspondence between performance on the ACT and performance on the PPST, even when there was no difference in cumulative grade point averages between disabled students and the control group.
8. This study contained no evidence of test bias that could be attributed directly to disabling conditions.

DISCUSSION

Instrumentation and Related Issues

As previously noted, the PPST is wholly owned and controlled by ETS, whose *Bulletin of Information* (1988–89) states that the responsibility to establish the PPST's validity is that of each user. The university has completed no such validity studies encompassing the whole student body in order to document its validity and reliability as a measure of competency in reading, writing, and math, yet continues to apply the precondition of obtaining certain cut scores as a graduation requirement. A study conducted by Tompkins and Mehring (1986) raised questions about the validity of using the PPST as a competency test.

Another instrumentation issue was that even while the university required students to achieve minimal competencies (cut scores) in reading, writing, and math, it has never translated those terms into sets of general and specific skills and skill levels that it desired students to achieve. Consequently, the university relegated these definitions and decisions to ETS, which can change subtest content at any time without notice. With no input into, control over, or even knowledge of the content-related skills and skill levels of the currently used PPST, the university was left in a very untenable position relative to validity and reliability. The university's own education standards were thereby unknown and unknowable.

The third instrumentation issue, which was an extension of the second, was that the university also required that alternate exams that measure the same competencies as the PPST be available for students. More specifically, to what extent were these alternate exams valid and reliable? Do the alternates measure the same skills and skill levels as the PPST? A need for an affirmative response to this question was stressed by a former Regents Counsel as recorded in the December 5, 1986, Minutes of the Competency Testing Advisory Committee. A faculty Senate Bill titled "University Competency Testing Program" dated April 7, 1987, stated that "All examinations shall be consistent in their requirements for all students." Using the PPST with unknown validity and reliability and an undefined content as the sole referent for the alternate exams would appear to undermine any objective measure or knowledge of consistency.

The fourth instrumentation issue involved accommodations available to disabled students. ETS required students who wanted accommodations to personally make such requests directly to them. They then decided what accommodations would or would not be given and notified the university. As a consequence, the Office of Disabled Student Services had no knowledge of or influence over this crucial decision-making process. Historically, this decision-making process has worked to the detriment of some students, as well as relieved the university of the legal liability associated with such decisions.

Recommendations to the University

The following recommendations are offered in light of the aforementioned data, the PPST's unknown validity and reliability, and the university's use of the PPST as a measure of competency for the entire student body.

1. Waivers for some disabled students should continue to be an option because there are no cassette versions of the PPST. This is especially true for students with visual-perceptual impairments.
2. The university should have more control over and input to the accommodations received by or denied to disabled students.

3. Students who fail the PPST should receive a report of their test performance from ETS, which could be helpful to professors as they advise students. To date no such individualized reports are available from ETS.
4. University course work, required competencies, and other educational options should closely correspond to help students develop the type and level of skills required by the university's competency exams and to minimize the number of retests.
5. Students' performance on the competency exams should reflect a mastery of university coursework rather than other factors such as pre-university scholastic achievement.
6. The PPST should be evaluated for its validity and reliability relative to its use as a competency test for the university's entire student body.
7. The university should define its terms. For example, what skills and levels of skills comprise reading, writing, and math? The degree of consistency cannot be established between all alternative competency exams for all students (as required by the Faculty Senate Bill) without definitions. Certainly a positive, complimentary relationship between the university's educational options (such as course work and the Reading and Writing Labs) and measured competencies awaits such definitions. Also waiting on these definitions are test validity and reliability. In addition, decisions about accommodations for disabled students depend upon known definitions. For example, would the provision of a calculator undermine the measurement of math skills? Would the provision of a reader undermine the measurement of reading skills?
8. The university should establish a task force to thoroughly study every aspect of the competency testing program.

CONCLUSIONS

No one denies the university's premise that a quality education should be provided and monitored. What university would advocate against such commonsense, honorable intentions or against the need for feedback if the educational system is to be self-correcting? Justification and substantiation are ever-increasing realities in today's world of strings-attached funding and a state-mandated open admissions policy. Within this context, competency-based testing was embraced by this university as one quality assurance standard.

This standard, however, relies explicitly on satisfying criteria such as validity, reliability, the appropriate accommodation of disabilities, and satisfactory norms. Clearly, this university's current use of the PPST does not meet basic psychometric standards. And all students, especially disabled students, are paying a price.

In this open admissions university approximately 20% of all students and 36% of disabled students (Table 1) who take the PPST fail to pass even after repeated testing. Clearly these numbers appear to be high at first glance. One explanation for these high percentages is that, because of the university's open admissions policy, students are admitted who are known to have a very low probability of academic success. To make the point, persons who are psychotic or borderline mentally retarded must be admitted (by law), and occasionally are. The admission of unqualified or marginally qualified students raises the failure rates, especially in the subpopulation of disabled students.

Another factor that may have a bearing on the discrepant failure rates is that the PPST may be measuring something in addition to university-related academic achievement. It is well known that the best single predictor of academic achievement in postsecondary education is the degree of previous educational achievement, such as high school grades (Martin & Bowman, 1985; McCormick & Asher, 1964). The university cumulative grade point averages for disabled students and the whole student body were not found to be different, even though the ACT data in Table 4 testify to the fact that this university's disabled students scored relatively lower on pre-university scholastic achievement. An insight into this situation may have been found by Tompkins and Mehring (1986) when they concluded that the PPST appeared to differentiate students primarily on the basis of scholastic aptitude as opposed to solely on the basis of academic achievement. They go on to say that scholastic aptitude is not an accurate predictor of measured competency except at the two extremes of the ability spectrum. Certainly this university's disabled students are not, as a whole, located at either of the two extremes. The *Mental Measurements Yearbook* (Aiken, 1985) has indicated that the ACT measures both achievement and aptitude and that its Composite score correlates around 0.40 to 0.50 with college freshman grades. Thus, both PPST and ACT are measures of scholastic aptitude, as well as academic achievement. Tompkins and Mehring suggested that academic achievement is also influenced by the performance-motivation domain, as reflected in cumulative grade point averages.

A final suggested partial explanation for the higher failure rate of disabled students on the PPST is that some of these students fail to request needed accommodations. Some students do not know that accommodations are available even though the registration materials clearly state their availability. Others prefer to try to pass without accommodations and request accommodations only after they have failed one or more times. Still others (a minority) are so proud that they would rather fail the PPST and not graduate than use accommodations.

Using off-the-shelf, commercially available tests for competency testing was at first assumed to be advantageous to both university and student body. The assumption was also made that every student who could read, write, and compute at the predetermined level of minimum competence would pass the test and that students who could not pass did not deserve to pass, thus assuring educational quality. Clearly, the failure of competency testing at this university leads us to question those assumptions.

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Methods of Adapting Computers for Use by Disabled Students

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ABSTRACT

Many colleges have computer labs where students may use computers to complete academic requirements such as programming or word processing. Educational, societal, and legal reasons provide a rationale for making computer labs accessible to disabled students. A variety of adaptive devices have been developed that facilitate computer use by individuals who have visual, hearing, physical, learning, or other disabilities. Through the use of adaptive devices, special purpose equipment, and facility modifications, computer labs can be designed to permit disabled students to reach beyond their limitations and to increase their independence.

Computers have become commonplace in today's world. For educational, societal, and legal reasons, colleges should make reasonable efforts to provide disabled students with equal access to computers used for program-related activities.

In the field of education, computers are playing an increasingly important role for students, teachers, and administrators at all levels from elementary schools through higher education. Results of a national survey commissioned by the U.S. Department of Education indicated that, in 1985, 90% of children in the United States attended schools that had one or more computers (Becker, 1987). In June of the same year, findings of a National Task Force on Educational Technology indicated that public schools had an average of 1 microcomputer for every 40 students and that this ratio is expected to be 1 to 15 by 1989 (National Task Force on Educational Technology, 1986). According to Osgood (1987), associate editor of *Byte* Information Exchange, the number of colleges that have "put microcomputers on students' desks" has increased so much in the past few years that updating a short 1984 article about applications of microcomputers in the nation's colleges would preempt an entire issue of *Byte* magazine today. Williams (1986) recently reported that hundreds, and possibly thousands, of postsecondary institutions around the country have purchased adaptive computer aids for disabled students.

The use of computers permits many disabled individuals to reach beyond their physical limitations and, in turn, decrease their dependence on others and increase their contributions to the world around them. A disabled person may have the cognitive ability that is necessary for academic achievement or employment, but he or she may not be able to hold a pencil, see a page, or hear someone talking. Bice, Burkhalter, Gorman, and Jacobs (1985) stated that microcomputers offer new hope for more effective functioning in the classroom and in the workplace for the country's 35 million disabled people. In the computer field alone, more than 1500 job placements had been filled by disabled individuals as of 1985 (Vagoni, 1985). Just as eyeglasses have eliminated a potential visual handicap for many people, computer technology may make it possible to effectively eliminate some physical or sensory disabilities, according to Vanderheiden (1982), Director of Trace Research and Development Center on Communication, Control, and Computer Access for Handicapped Individuals.

Legal requirements provide part of the justification for colleges purchasing adaptive computer equipment. Federal laws—and some state laws—prohibit discrimination against disabled people. Section 504 of Public Law 93–112, the Rehabilitation Act of 1973, refers to educational rights for handicapped people and mandates opportunity for equal accessibility to educational programs. Section 504 is the basic civil rights provision that terminates discrimination against handicapped U.S. citizens (Ballard, Ramirez, & Zantal-Wiener, 1987). It states the following:

> No otherwise qualified handicapped individual in the United States . . . shall, solely by reason of . . . handicap, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance. (29 U.S.C. 794).

The statute applies to institutions that receive or benefit from federal financial aid for the operation of educational programs or activities (U.S. Department of Education, 1987). Specific obligations of postsecondary education institutions receiving federal funds include the following:

- Handicapped students must be afforded the opportunity to participate in any course, course of study, or other part of the educational program or activity offered by the recipient.
- Academic requirements must be modified, on a case by case basis, to afford qualified handicapped students . . . an equal educational opportunity.
- Students with impaired sensory, manual or speaking skills must be provided auxiliary aids.
- A recipient may not impose upon handicapped students rules that have the effect of limiting their participation in the recipient's education program or activity. . . .
- All programs and activities must be offered in the most integrated setting appropriate (p. 7)

Thus, as Jacobs and Jacobs (1984) noted, administrators in higher education should be concerned with issues that relate not only to building accessibility but also to program accessibility.

The increasing importance of technology for handicapped people is indicated by recent passage of amendments to two federal laws. Part G of Public Law 99–457, the Education of the Handicapped Act Amendments of 1986, was created to promote the use of technology in special education programs (Department of Governmental Relations, n.d.). Technology is given special consideration in the 1986 amendments to the Rehabilitation Act of 1973, which has a new section, Section 508, that addresses accessibility of electronic office equipment. According to Brill (1987), Section 508(a) is a "sleeper" that has the potential for tremendous impact on education, employment, and daily activities.

Many colleges have computer labs where students use micro-, mini-, or mainframe computers to complete academic requirements such as programming or data analysis. In addition, software for word processors, spreadsheets, data bases, graphics, and other course-related activities is available for use in some labs. Adaptive devices are needed to provide blind, visually impaired, and some physically disabled students with the same opportunities as nondisabled students to successfully complete assignments that require computer usage. For example, a blind student may need to produce a braille copy of a paper to edit it, but may need to submit a print copy to a course instructor. A person with a motor impairment may have difficulty consistently typing the correct key. Specialized equipment may benefit students who have other types of disabilities also. This article gives brief descriptions of major adaptive devices, special purpose equipment, and facility modifications.

ADAPTIVE DEVICES AND FACILITY MODIFICATIONS

A variety of adaptive devices have been developed to facilitate computer use by disabled individuals. Advantages and disadvantages of devices vary considerably. A device may be appropriate in one situation but inappropriate in another. Several versions of similar adaptive devices may be produced, and specific features may differ from one version to another. Some items are available for use with several different models of computers, whereas others are produced only for one or two models. Prices, even for some devices that serve the same purpose, range from under $100 to several thousand dollars.

Adaptive devices, special purpose equipment, and facility modifications are indicated for each common disability. Disabilities for which alternatives are presented include blindness, low vision, hearing impairments, physical disabilities, health-related impairments, and learning disabilities. Actual needs will vary from one individual to another, even for students who have a common disability.

Blindness

Many blind persons can learn touch-typing fairly easily, so mode of output poses a greater problem than mode of input, according to McWilliams (1984). Two types of computer adaptations are available for blind persons: voice and tactile. Special purpose equipment is available also.

Voice Systems

Voice synthesis systems provide blind individuals with an effective means of inputting and editing information when using a computer. Features of different voice models vary considerably. Typically information is spoken as it is typed, and usually it can be located and read later. The user often has a selection of several output modes such as single words, whole lines, individual letters, punctuation marks, characters, and even spaces and indentations. Pronunciation can be modified on some versions. Quality of speech, formatting capability, variable rate options, and ease of use vary from one system to another.

Tactile Options

Several different tactile options can facilitate input, output, and editing of computer activities for blind individuals.

1. Input considerations
    - Keyboards should have keys in standard locations.
    - Felt tabs on "home" and commonly used command keys makes these keys easier to locate.
    - Standard keyboard tops with letters and characters embossed in braille facilitate learning to touch-type.
2. Output and editing options
    - Paperless (refreshable) braillers enable the user to type information in braille, read it line-by-line in braille, make changes or correct errors, and store pages on disks or cassettes. They typically are small, portable devices that consist of a braille keyboard, changeable braille display window, and disk drive or cassette tape recorder. Some may be connected to a braille printer or embosser to produce braille hardcopy manuscripts. One model can receive type from a personal computer and convert it into braille or vice versa, thus permitting sighted and nonsighted users to read and edit the same text.
    - Braille printers produce material embossed in braille. They are functionally similar to conventional computer printers.

Special Purpose Equipment

Specialized equipment can help to increase independence and flexibility of services for blind individuals.

- Braille translation software programs translate standard print into braille code and vice versa. They permit a sighted person to type and edit standard text and then to format it into braille that can be printed using a braille printer. Most of the programs are compatible with voice synthesis devices.
- Optical character recognition scanners enable a blind person to read printed material unassisted. One type is designed to convert print into multipin, raised letters or other characters the user reads by touch. Another type converts text into synthetic speech. One model of the latter type, the Kurzweil Reading Machine, can be used to transfer written material to computer disks that can then be used with appropriate computer hardware and software for screen editing or for printing in large print or in braille.

- Modified Perkins brailler is a standard Perkins brailler that has been modified to work with a computer. A blind person can use it for composing and editing text, for braille printing, and as a computer terminal.

Facility Modifications
When planning accessibility for blind persons in a computer center, consideration should be given to the following modifications:

- Use of braille signs or labels where appropriate, e.g., on disks
- Placement of braille signs at standardized height on walls (approximately 5 feet)
- Provision of braille or audio versions of commonly used software and hardware manuals, special instructions, and computer lab procedures
- Placement of disk drive where disks can be inserted or removed easily

In addition, the adaptive computer station should be easy to find, should be moved or altered as infrequently as possible, and the pathway to it should be kept free of obstructions. Obstacles above waist level should be avoided because they may be missed by a cane user.

Low Vision

For legally blind persons with low vision, often called *visually impaired*, appropriate modifications involve use of voice and enlarged print. Facility and computer hardware modifications may be helpful also.

Voice Systems
Voice options are discussed in the section on blindness.

Enlarged Print
Enlarged print alternatives display material in large print either on a computer monitor (soft copy) or on paper (hard copy).

1. Soft copy
    - Enlarged print can be generated on a computer monitor using a combination of special hardware, software, or built-in firmware. Computer-screen enlargement systems enable a partially sighted person to view material on a monitor more easily. A variety of features are available. Particularly useful features include adjustable zoom lens, variable character size, and image enhancement (e.g., highlighting a selected block of text or ability to change image from black on white to white on black). Similar systems for closed circuit television (CCTV) monitors can be used for editing also. The addition of a camera permits split window capability, which enables the user to simultaneously view a printed document such as computer print-out and text generated by a word processor.

    - Screen overlays are special lenses designed to magnify a computer display slightly and to reduce glare. They are portable, lightweight screens that are placed over the standard monitor screen.

2. Hard copy
    - Large print documents can be produced using a dot matrix or laser printer with computer software designed for this purpose.
    - An alternate method is to enlarge documents with standard size print by using an office copying machine that has enlargement capability.

Special Purpose Equipment
The Kurzweil Reading Machine, described in the section on blindness, may be useful for visually impaired people who, for example, may have difficulty reading small print in a computer manual.

Hardware Considerations
The following considerations will facilitate computer usage by persons who have some useful vision.

- Provision of detached, repositionable monitor
- Provision of black-and-white or color monitor for individuals whose eyes are sensitive to green
- Use of keyboard that has keys in standard locations
- Placement of dark-colored, felt tabs on home and commonly used command keys

Facility Modifications
As was true for blind persons, the adaptive computer station should be easy to find and should not be moved or altered without good reason. Its approach path should be kept clear of obstacles. Properly placed lighting can reduce glare. Height of signs on walls should be standardized. Whenever possible, large print or audio versions of commonly used software and hardware manuals, instructions, and computer lab procedures should be provided. Print on labels or signs should be extra large. (The size most commonly used for large print materials is 18 point). Use of a bookstand can free the hands of an individual who has low vision and may help to avoid neck strain by allowing written material to be placed closer to the eyes.

Hearing Impairments

Deaf individuals must rely on visual displays and usually do not need special adaptations. However, software that visually presents all information, including warnings, should be used, and programs depend on beeps or on voice should be avoided or adapted for visual use.

Individuals who are hard of hearing, like those who are deaf, usually do not need special adaptations. Nevertheless, special attention should be paid to hardware or software that uses sound. Volume should be adjustable—to a reasonably high level, if possible. Equipment with an audio connection point for headphones is desirable so the user can avoid disturbing others in the room. For more volume or better fidelity, external speakers are another option, but speakers should be used in a sound-proofed room. This type of room can help to eliminate distracting sounds also. An alternative is to locate the computer lab, or at least one computer station, away from excessive noise such as heavy traffic.

Physical Disabilities

Keyboard alternatives and facility modifications are the primary needs for students with physical disabilities. If students have mobility problems with their hands or arms, software that requires a minimum amount of typing should be selected when possible.

Keyboard Alternatives

A variety of keyboard alternatives enable physically disabled individuals to interact with computers. Options include modifications for a standard keyboard and devices that are used to bypass the keyboard.

1. Major devices used *with* a standard keyboard are:
   - Headpointer: Adjustable-length rod in a frame that is worn at top of head across forehead. It is used to depress keys.
   - Keyguard: Plastic or metal overlay that has finger-sized holes corresponding to locations of keys. It helps prevent accidental keystrokes and can be used with a finger, mouthstick, or headpointer.
   - Key latch: Lever positioned over several keys to permit a user to press several keys with one finger.
   - Key lock: Device used to disable keys that are not needed.
   - Mouse: Small device that permits control of cursor by sliding the device on a tabletop and depressing a button on it to activate a command. It is used in addition to a keyboard to perform some keyboard functions. There are mechanical and optical versions, but the mechanical version is more common.
   - Mouthstick: Rod held in mouth and used to depress keys.
   - Wrist brace: Device placed around wrist and used to depress keys.
2. Major devices that permit input *without* using a standard keyboard are:
   - Light pen: Pencil-sized rod with tip that emits a tiny beam of light. It can be used to move cursor, to select items from on-screen menu, or to create graphics.
   - Light pointer: Electronic input device that is worn on head or held in mouth; projects dot of light.
   - Touch pad/graphics tablet: Flat tablet, with pressure-sensitive surface and often with control keys, that is linked to computer. It is designed primarily for graphics but alternate uses are being explored for handicapped individuals.

- Voice recognition module: Device designed to permit input through spoken utterances, such as words, letters, or numbers.
- Keyboard emulator: Device that replaces keyboard and that emulates standard keystrokes electronically, such as by using Morse code keys.

3. Additional alternatives include the following: Eye-activation keyboard device, foot pedal, oversized keyboard, pressure-sensitive membrane, programmable keypad or overlay, and special switches.

Facility Modifications
Several modifications to the physical space in a computer lab are important for physically disabled persons.

- Adjustable-height table facilitates use by both people in wheelchairs and persons who need standard height tables.
- Detachable keyboard enables user to position it appropriately.
- Use of an external disk drive permits its placement within reach of a person seated in a wheelchair.
- Aisles must be wide enough to permit safe maneuverability of wheelchairs.
- Signs should be placed at a height that enables seated individuals to read them easily.

Health-Related Impairments

Students who have health-related impairments generally do not require adaptive equipment. However, some may benefit from the use of filters designed to reduce glare. Glare filters are screens installed on or placed over standard computer monitors.

While researching this paper, the author met someone concerned about computers as a possible cause of epileptic seizures. This belief apparently is unfounded, even though seizures may be caused by sensitivity to certain types of light, according to C.S. Jelich, Coordinator of DATALINK and Technological Services at the Epilepsy Foundation of America (personal communication, June 18, 1987). Results of a literature search, conducted by R. Ertwine, Information Data Coordinator at the National Epilepsy Library and Resource Center (personal communication, June 23, 1987), revealed no relationship between photosensitive epileptic seizures and computer screens, though there is some evidence that "movement of characters on video game screens can induce seizures in susceptible people."

Learning Disabilities

Learning disabled students can use standard computer hardware, software, and peripherals without modifications. Some students with learning disabilities find that certain adaptations, such as voice output devices and enlarged print, are helpful, according to C. Dietrick, Supervisor of the Learning Disabilities Lab at Miami-Dade Community College (personal communication, May 12, 1987). These adaptations are especially useful when students are doing word processing. As was true for hard-of-hearing individuals, noise can be a serious distraction, so computers should be located in an acoustically protected area, if possible.

All Disabilities

A few considerations apply to computer use by disabled students, in general.

- Computers with open architecture and plenty of "expansion slots" permit greater flexibility than closed systems.
- On-off switches are easier to use if they are located on the front of hardware rather than on the back.
- Instructions that are on disks are more flexible than those in written format. Physically disabled persons may find them easier to manipulate, and, with a braille or dot matrix printer, they may be converted into braille or large print for blind or visually impaired students.
- Adaptive computer systems usually can be designed to be flexible enough to meet needs of both disabled and nondisabled students.

POWERFUL TOOLS

Disabled students should have the same opportunities as nondisabled students to participate successfully in academic activities that involve use of computers. They should be able to use computer equipment that already is located in a college's computer lab, and they should be able to use computer facilities as independently as possible. With adaptive devices, special purpose equipment, and facility modifications, independent access to computers is a possibility for many disabled individuals. Through computer technology new challenges have arisen, but powerful tools have been developed that permit disabled students to overcome previous barriers in education.

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Comparison of Physical Therapy Majors and Other College Students' Attitudes Toward Persons with Disabilities

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ABSTRACT

Practicing physical therapists (PT's) have been found to display significantly more favorable attitudes toward disabled persons than have a comparable group of school teachers. This was attributed in part to clinicians' greater exposure and direct experiences with persons who are disabled. This study tested the hypothesis that students majoring in PT would display more positive attitudes toward persons who are disabled than would a control group of non-PT students and that previous work experiences with the disabled would positively correlate with scores on the Attitude Toward Disabled Persons Scale. Results suggest that physical therapists' tendency to exhibit favorable attitudes toward the disabled may be evident earlier than expected in their careers and may be due to factors other than (or in interaction with) direct experiences with people who are disabled. Results are discussed in regard to identifying the factors in intervention programs that contribute to positive attitudes toward persons with disabilities.

Many communities and institutions have recently witnessed improved architectural access for people with disabilities. Yet though many physical barriers have been eliminated, negative attitudes toward disabled people pose a silent yet solid barrier that can be more resistant to change than simple structural obstacles (Fichten, Hines, & Amsel, 1985). Various approaches have been implemented to alter negative attitudes toward disabled people, but the results of these approaches are equivocal (Donaldson, 1980). There are still numerous questions about identifying target populations that hold specific attitudes toward disabled persons and determining factors that can be manipulated in intervention programs to induce positive attitude formation.

Some recent research suggests that different groups of professionals hold differing attitudes toward people with disabilities. Bohlander (1985) reported that, when compared with a group of school teachers, physical therapists exhibited significantly more positive scores on the Attitude Toward Disabled Persons (ATDP) Scale (Yuker, Block, & Younng, 1972). Identifying the factors responsible for, or underlying, the therapists' positive attitudes is important, for it may provide useful information for interventions aimed at promoting healthy feelings toward special populations.

Thus, this study was designed to extend Bohlander's (1985) findings. Bohlander hypothesized that the nature of clinicians' professional experiences may serve to form or to reinforce positive attitudes toward disabled people. However, another possible explanation of Bohlander's findings is that individuals actually enter the health professions with pre-established positive attitudes toward people with disabilities. Thus, it may not be clinical experiences, per se, but other background experiences that affect positive attitudes and possibly even prompt such individuals to select a career in the health professions. This study was designed to assess this possibility by following up Bohlander's work and exploring the attitudes of undergraduate students with different career interests. A variety of hypotheses, based on Bohlander's (1985) and other findings, were tested. These hypotheses are:

1. Students who identify themselves as interested in physical therapy careers will display more positive attitudes toward disabled persons than will students who identify themselves as interested in education or other non–allied health professions.
2. Students who identify themselves as entering a health profession or a helping profession will exhibit more positive attitudes toward disabled persons than will those who do not identify themselves as entering a health or helping profession.
3. Regardless of career interest, female students will exhibit more positive attitudes than will males. This hypothesis is based on inconsistent evidence regarding gender differences in ATDP scores. The ATDP test manual, which has separate norms for males and females (Yuker et al., 1972) and other literature reviews (e.g., Jarrow, 1987) have concluded that females display consistently more positive attitudes toward disabled persons than do males. Patrick's (1987) recent data, however, did not support the existence of gender differences among physical educational college majors who were given one form of the ATDP scale.
4. Those students who display more positive attitudes toward disabled persons will have greater amounts of previous clinical or personal contact with people with disabilities. This hypothesis is based on the contact hypothesis of attitude research, which asserts that direct contact with certain special populations (e.g., the elderly, ethnic groups, disabled persons) is an effective method for facilitating positive attitudes toward members of these groups. The contact hypothesis has been widely studied with equivocal results. In experiment and literature reviews, Esposito and Reed (1986) and Jarrow (1987), respectively, pointed to the favorable effects of contact with disabled persons on attitude formation, but other research suggests that the nature of the contact must be further examined. The effective variable, it has been suggested, is not direct con-

tact, per se, but other qualitative aspects of the social interaction between disabled and nondisabled persons (Bender, 1980; Donaldson, 1980; Evans, 1976).

METHOD

On two separate occasions, data were collected from college students attending two different small colleges located approximately 40 miles apart. Institutional review criteria were met at both facilities prior to the start of the study. The subjects were students attending undergraduate education, psychology, or physical therapy classes and had been told beforehand by their instructors that they would be asked to participate in a 20-minute study that would involve completing two questionnaires.

Test Administration

At the onset of the study, students were given the following instructions: "I am a professor at (name of college) and I am developing a career questionnaire survey. I would appreciate your helping me to determine how long it takes to complete these two forms and helping me develop a set of norms to use for these tests. You do not need to put your name on the forms, and your answers will be strictly anonymous. Please answer as truthfully as possible. Thank you." Students were again informed that their participation was not mandatory, and those who wished to were free to leave. Only one subject opted not to participate.

Because of the authors' concerns about identifying the nature of the study, the students were deliberately not told that their attitudes toward disabled people were being assessed. The students were then handed two different questionnaires and an answer sheet. The first handout, assembled by the authors and labelled "Career Questionnaire," consisted of eight items asking the students to identify their age, sex, anticipated major, year of study, whether they intend to enter a health or helping profession, whether (and if so, for how long) they had worked closely with disabled individuals, or whether they or someone close to them was disabled. The purpose of this first handout was two-fold: to obtain the personal information from the subjects and to follow up the instructions regarding a career questionnaire survey.

The second questionnaire was the Attitude Toward Disabled People scale, Form A (Yuker et al., 1972), which is a commonly used, easily administered survey consisting of 30 statements about disabled people. Respondents are asked to indicate, on a 5-point Likert-type format answer sheet, their agreement/disagreement with statements about people with disabilities, e.g., "Disabled people are often unfriendly" or "Disabled people are usually sociable." The ATDP scale is reported by its authors to exhibit high test-retest reliability as well as internal consistency and validity. The scale was selected for this study because of its previous use in similar research, thereby enabling direct comparisons with other, similar data.

After all the forms were completed and collected, the students were then briefly introduced to Bohlander's (1985) work and told the rationale for the current investigation. Those who wished to asked questions about related research and about the ATDP scale.

RESULTS

Students were initially assigned to different career interest categories: education, psychology, physical therapy, and a non-physical therapy, allied health category consisting of students expressing a career interest in medical/rehabilitation fields, e.g., occupational, art, or recreation therapy. The occasional students who expressed interest in other careers such as business and art were dropped from the study. The numbers of subjects per category and their mean ATDP scores are listed in Table 1. The nature of the ATDP scoring system is such that the higher the score, the more one perceives disabled persons as being similar to nondisabled persons. Thus, lower scores indicate less positive attitudes.

As seen in Table 1, the mean ATDP scores of the education (group 1) and psychology majors (group 2) were very similar. Statistical comparison of the mean ATDP scores by a two-tailed *t* test indicated these two groups were not statistically different from one another (t = .72, df 43, n.s.). Therefore the data from these two groups were pooled. The advantage of this procedure is that it simplifies statistical analyses and enables comparisons between similarly large groups composed of non-physical therapy (Groups 1 & 2 combined) vs. physical therapy (Group 3) majors. These data are compiled in Table 2.

The average ATDP score of Group 4 (Table 1) was below the norm listed in the ATDP manual as well as below the means of the other groups examined in this study. Inspection of the data indicated that the majority of the members of this group (9 out of 11 [the other two indicated interest in art therapy and genetic counseling]) identified their career interest as nursing. Because this group comprised such a small number of subjects, did not include the subjects originally predicted for this category, and exhibited mean ATDP scores quite different from the other groups, it was dropped from subsequent group analyses.

To test the first hypothesis, that students interested in a physical therapy career would display more positive attitudes toward disabled people than would non-physical therapy students, the overall mean ATDP scores in Table 2 were compared.

Table 1
Mean ATDP Scores of College Students with Different Career Goals

	N	*M*	*SD*
Education	23	125.6	16.6
Psychology	22	121.2	23.3
Physical Therapy	49	132.8	15.5
Non–PT/Allied Health	11	115.9	17.9
ATDP Form A* Norms			
Males		120.4	22.6
Females		123.6	24.0

Results of a one-tailed t test were significant ($t = -2.54$, df 92, $p < .05$), indicating more positive attitudes on the part of the physical therapy majors.

The second and third hypotheses could not be directly tested because of the lack of variability of subjects. In the non-PT group all but 1 subject and all 49 of the PT group indicated they were entering a helping profession. Similarly, hypothesis 3 regarding sex differences was not tested because all but 3 of the non–PT and all 49 of the PT majors were female.

Hypothesis 4 explored the relationship between subjects' personal or professional contact with the disabled and their ATDP scores. Using a nonparametric statistic to accommodate the yes–no question, subjects' responses as to whether or not they or someone close to them was disabled was found to be nonsignificantly correlated with ATDP score (Spearman $r = -.1646$, $n = 94$, n.s.). Similarly, whether or not the students had worked with disabled people was nonsignificantly correlated with ATDP scores (Spearman $r = -.1261$, $n = 94$, n.s.). Of those subjects who indicated they had previously worked with disabled people, the number of months they worked with such individuals was also not significantly correlated with ATDP score (Pearson $r = .12$, $n = 63$, n.s.). The frequency of responses and mean ATDP scores broken down according to these questions are compiled in Table 2.

It should be noted that the scores of the students in this study are quite comparable to the scores of practicing therapists examined in other studies. The mean ATDP score for physical therapy students in this study is 132.78, whereas Bohlander reported a median score of 132 for her study of 31 practicing physical therapists. Speakman and Kung reported a median score of 124.50 for a group of 125 physical therapists practicing in Wisconsin. The mean scores for the ATDP manual are separated according to sex because of consistently higher scores obtained for females. In this study, the education and psychology students' scores of 123.44 match the female ATDP mean, whereas the physical therapy students' scores are one-half standard deviation above the mean (Table 1).

Table 2

Relation Between College Students' Major and Contact with Persons who are Disabled

Major	Overall ATDP* Score	Have you ever worked with disabled persons? Yes	No	Are you or is someone close to you disabled? Yes	No
Education & psychology	123.44				
Score	45	123	123	126	122
n		25	20	16	29
SD		24	14	23	18
Physical therapy	132.78				
Score	47	133	131	136	130
n		40	9	20	29
SD		14	23	14	16

DISCUSSION

Concern has been expressed regarding the attitudes of the general public and different professionals toward persons with disabilities (Bender, 1980; Fichten et al., 1985; Rousch, 1986). It is widely accepted that the attitudes toward disabled persons of educators and health and rehabilitation personnel affect the way they interact with their clientele (Bohlander, 1985; Kirchman, 1987; Patrick, 1987; Shortridge, 1982). This assumption has been researched extensively in the field of education because of the increase in the numbers of disabled children or adults integrated into regular school or college classroom settings, resulting in an increase in the amount as well as types of exposure that teachers have to disabled students. As Patrick (1987) noted, "The need for teachers to hold positive attitudes toward their students is a sina qua non for effective education" (p. 317). This also applies to the attitudes of various professionals who work with people with disabilities (Kirchman, 1987; Speakman & Kung, 1982).

Bender (1980) has pointed to four strategies for promoting positive attitudes toward disabled persons: education, legislation, contact, and education plus contact. The results of this and of other studies (Anthony, 1972; Donaldson, 1980; Evans, 1976) indicate that direct contact with people who are disabled may not be a sufficient condition for bringing about positive attitudes toward disabled persons. In fact, at times direct, unsupervised, or unstructured contact may result in increased prejudice (Donaldson, 1980). This study demonstrated that neither the variable of working with disabled people nor the duration of contact with disabled persons significantly correlated with ATDP scores. A little over half (55%) of the psychology /education students indicated that they had previously worked with persons who were disabled, compared with 82% of the physical therapy students. Of those students who indicated they had worked with disabled persons, however, the number of months worked with the disabled did not significantly correlate with ATDP score. In fact the correlation coefficient, though low and not significant, was negative.

These data are inconsistent with the speculations of other authors who have hypothesized that experience with disabled persons should positively affect ATDP scores (Yuker et al., 1972; Esposito & Reed, 1986; Jarrow, 1987). The results of this study, however, suggest that factors other than (or in addition to) experiences with disabled persons may effect positive attitude formation. Evans (1976), for example, found that contact with disabled persons was not effective, whereas social interactions structured by disabled persons led to positive attitude formation by nondisabled subjects. Bender suggested that education plus contact is the most effective means of changing attitudes; however, the nature of the contact must be explored. Several researchers (Bender, 1980; Block & Yuker, 1979; Donaldson, 1980) have pointed to the relevance of contact with disabled persons who are at least equal in status to the nondisabled interactants. Equal status relationships, Donaldson explained, "are those in which the handicapped individual is of approximately the same age as the nondisabled person and/or is approximately equal in social, educational, or vocational status" (p. 505).

Amir's (1969) hypotheses about the effect of direct contact in promoting positive attitudes among ethnic groups may bear examination for application to existing research about attitudes toward disabled persons. Amir hypothesized that several conditions must exist in order for contact between groups to produce positive results. These conditions involve groups made up of members of equal status and a functional or structured contact that not only engages participants in intimate (not casual) interactions but is also pleasant for both groups. One question being explored in regard to attitudes toward disabled persons is whether indirect contact through various print (literature) and nonprint (film) media is effective. Monson and Shurtleff (1979) reported that children's attitudes toward physical handicaps improved when they were exposed to nonprint media coupled with teachers who supported the program and promoted positive attitudes. Gilfoyle and Gliner (1985) reported that an educational puppet show had some effect in educating students about their physically handicapped peers but that personal feelings and behavior may not have been affected. They concluded that educational experiences comprise only one step and need to be coupled with additional methods, including direct contact with children who are disabled.

Similar conclusions have been drawn regarding the effectiveness of educational programs in promoting positive attitudes toward disabled persons among undergraduate students. Some of these programs include, among other activities, different types of contact with disabled persons. Kirchman (1987) reported the success of a one-semester teaching module in significantly enhancing the scores of occupational therapy students on the ATDP scale, Form O, a form similar to but briefer than the one used in the current study. Kirchman's course, which centered around the issues of disabilities and death and dying, included lectures, independent readings, and simulations where students were to assume a disability and then discuss their feelings in a small, supervised group. For 2 successive years, this program was found to be significantly effective in increasing the students' ATDP scores.

Unfortunately, Kirchman's study is inconclusive. A control group was not used, and other evidence indicates that it is possible for factors other than the content of the course to alter ATDP scores. Patrick (1987), in a well-designed study that controlled for confounds that may occur with pre–post administration of the ATDP, found significant effects of participation in an adapted physical education course. He reported that students' attitudes toward disabled persons were altered in a positive direction by a 10-week course that included lectures, assigned readings, films about and guest lectures by persons with disabilities, and 10 hours of individually scheduled, closely supervised teaching of a "moderately to severely impaired person." He concluded that until it is understood what specific components of the curriculum are responsible for elevating the ATDP scores, multimodal approaches such as the one he tested he continued in similar undergraduate curricula.

Patrick (1987) reported that the act of testing students on the ATDP prior to an instructional course may, in and of itself, result in positive changes. He explains that students may actually "search for cue[s] as to what was expected for the course" (p. 322) and thereby alter their responses accordingly on the posttest. Yuker (1986) also pointed out that scores on the ATDP may be faked, i.e., enhanced, by individuals motivated to do so. The possibility exists that this occurred in this study, at least in regard to the physical therapy students, who may be more highly motivated to display positive attitudes toward disabled persons. It is hoped, however, that the mild deception used in this study in regard to asking the students to complete a career questionnaire may have dissipated any motivation to perform well on the ATDP. Not until after the ATDP was administered were the students informed of the real purpose of the research.

Another important consideration is the recognition that attitudes include affective and behavioral components. In this study there is no way to determine if more positive atittudes translate into corresponding fair and nonprejudicial behaviors directed toward disabled persons. An additional criticism is that the ATDP scale includes all disabled persons in one category. Clearly disabled people are all different, and their experiences with nondisabled people are likely to vary widely. However, until additional, more effective assessments are developed, the ATDP is likely to be widely used for comparative purposes with other studies.

IMPLICATIONS AND CONCLUSION

The results of this study indicate that students with different undergraduate majors display differences in attitudes toward persons with disabilities. In contrast to previous studies that examined the attitudes of professionals already in practice (Bohlander, 1985; Speakman & Kung, 1982), this analysis instead examined students prior to their receiving extensive practical or clinical experiences in their careers. All of the students in this study were undergraduates, and the majority of them had not yet entered their senior year. One of the concerns of this study is in regard to Group 4, which was designed to accommodate a non-PT "rehabilitation" group. The group ended up comprised primarily of students expressing an interest in nursing. Although the data must be regarded with caution because of the low numbers of subjects, this study provides preliminary data that nursing students exhibit low and unfavorable attitudes toward disabled persons, especially when compared with physical therapy students. Future studies may want to extend this report to validate these findings as well as to examine the nature of nursing curricula or nursing students' experiences to identify potential factors accounting for such low ATDP scores among this student population.

The results of this study suggest that positive attitudes toward disabled persons may evolve earlier in one's career than previously expected and as a result of something other than specific clinical (field) experiences. One possibility, although it was not tested by this study, is that the physical therapy students were exposed to curriculum content that, similar to that provided by Patrick (1987) and possibly Kirchman (1987), promoted positive attitude formation. Future studies may want, as Patrick has suggested, to compare curriculum content across majors in an attempt to identify the significant components that may be responsible for improving attitudes toward disabled persons among undergraduates. However, it should be noted that it has not been determined by this study what factors may account for the varied scores of the different majors. It is possible that other factors in the students' educational or personal histories were responsible for the different ATDP scores. It has also not been determined if positive ATDP scores correspond with positive behaviors directed toward people with disabilities.

One of the purposes of this study was to identify potential predictors of positive attitudes toward disabled people. Bohlander (1985), the authors of the ATDP Scale (Yuker et al., 1972), and others (Jarrow, 1987) have indicated that exposure to people with disabilities may facilitate positive attitudes toward these individuals. These speculations were not wholly supported. It is of interest that neither the variable of experience with people who are disabled or being disabled or close to someone who is disabled positively correlated with ATDP score. Clearly, continued research needs to explore the contact hypothesis in regard to changing attitudes toward disabled persons.

The authors of the attitude scale used in this study report that a positive experience with disabled individuals is a predictor of positive attitudes toward this group (Yuker et al., 1972). It would be instructive for educators in rehabilitation and other fields to understand what kinds of experiences (including the timing and scope of the experiences) effective positive changes in attitudes toward people with disabilities. In the meantime, other studies (Evans, 1976; Kirchman, 1987; Patrick, 1987) have indicated that some factors can be manipulated to promote attitude change or positive attitude formation in students who will eventually be working closely with disabled persons during their careers. This provides optimism that there are strategies for the gradual elimination of attitudinal barriers for disabled people. Future research needs to identify the strategies most effective in eliminating those barriers.

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The Association on Handicapped Student Service Programs in Postsecondary Education is a national, nonprofit organization of persons from all fifty states, Canada, and other countries committed to promoting the full participation of individuals with disabilities in college life. Since AHSSPPE began in 1978, its membership has grown to over 500 individuals from more than 350 institutions. The Association has sponsored numerous workshops and conferences that have focused on common problems and solutions in upgrading the quality of services available for handicapped students within postsecondary institutions.

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Letters to the Editor

Dear Editor:

I'm writing to take issue with a statement in the Winter, 1989 issue of the *Journal of Postsecondary Education and Disability*. On page 13, the last several sentences read:

> One explanation for these high percentages is that, because of the university's open admission policy, students are admitted who are known to have a very low probability of academic success. To make the point, persons who are *psychotic* or borderline mentally retarded must be admitted (by law), and occasionally are. The admission of unqualified or marginally qualified students raises the failure rates, especially in the subpopulation of disabled students.

There are two areas of concern in these sentences. First, as the article points out, there are many problems with determining competency. The assumption that "psychotic" persons "have a very low probability of academic success" is unsubstantiated and unverified, even by dubious competency tests. It is a discriminatory and stigmatizing statement.

Secondly, to refer to persons with psychiatric disabilities as psychotic is similar to referring to persons with physical disabilities as cripples. We've all worked hard to reduce the stigma for people with physical disabilities. It's time to put the same effort into reducing stigma for people with psychiatric disabilities.

I know that AHSSPPE continually makes efforts to reduce stigma and increase acceptance of students with disabilities. Section 504 of the 1973 Rehabilitation Act includes chronic mental illness among those conditions that are protected from discrimination and that require accommodation. As the journal for the national organization committed to serving the population of disabled students, I think it is timely to actively include the psychiatrically disabled under your protective umbrella.

I have included guidelines for writing about persons with disabilities that you may find helpful—and descriptions of several programs that are currently serving this group successfully. You may also be aware that the Chancellor's office of the California Community Colleges is proposing a statewide initiative to provide services on their campuses to persons with psychiatric disabilities throughout the state. Psychiatric disabilities are probably the disability group of the 90s.

Sincerely,

Karen, V. Unger, MSW, EdD
Director, Educational Initiatives

Note from Editor:

The articles to which Dr. Unger refers are available as follows:

1. *Guidelines for Reporting and Writing about People with Disabilities*, Research and Training Center on Independent Living, BCR/3111 Haworth, University of Kansas, Lawrence, KS 66045 (913) 842-7694 (Voice/TDD).
2. *Boston University Supported Learning Project Program Description*. Contact Dale M. Walsh, CRC, Director, Boston University, Center for Psychiatric Rehabilitation, 730 Commonwealth Ave., Boston, MA 02215.
3. Unger, K.V., Danley, K.S., Kohn, L., & Hutchinson, D., 1987. "Rehabilitation through Education: A University-Based Continuing Education Program for Young Adults with Psychiatric Disabilities on a University Campus." *Psychosocial Rehabilitation Journal, 10*(3), 35-49.

Postsecondary Education for the Disabled: An International Perspective

Stan F. Shaw, *Visiting Professor of Education, Henan Teachers' University, Xinxiang City, People's Republic of China*

and Professor, *Special Educational Psychology, The University of Connecticut*

ABSTRACT

This article reviews the development of programs for students with disabilities in the People's Republic of China. Recent developments providing postsecondary education for these students are analyzed. Recommendations regarding an international role for AHSSPPE are presented.

AHSSPPE members committed to advocating for the rights of disabled adults are often frustrated by the seemingly slow pace of progress and the many changes that have not yet been fully implemented. Although a lack of complacency and a vision of the next hurdle to be overcome are positive attributes for a "change agent," it is good to have an opportunity to get a broader perspective of the field. My sabbatical leave as Visiting Professor at Henan Teachers' University (400 miles south of Beijing) and consultant to China's Central Institute of Educational Research has given me a view from halfway around the world. More important, the People's Republic of China is attempting a complete overhaul of its education system as part of its modernization and economic reforms. Programming for college students with disabilities is, therefore, in a time of rapid development and great change.

CURRENT STATUS

Chinese government officials recently announced that on September 5, 1988, the People's Republic of China graduated its *first* class of 74 disabled college students. The students received their diplomas from Beijing Zhongshan Institute, a part-time college for adults, which was the first college to accept disabled students. The Institute was jointly established in 1985 by the National Association for the Handicapped and the Chinese government (Li, 1988).

This initial attempt to serve postsecondary students with disabilities raises many issues and questions. The majority of postsecondary programs are mostly limited to students with physical impairments, though China has had schools specifically for blind and deaf students since the late 19th century. In fact, there are more than 400 special schools in China educating children with sensory impairments (Chen, 1988).

Another concern is that postsecondary institutions are being set up specially to accommodate students with disabilities. It should be noted, however, that these are integrated settings where the majority of students are *not* disabled.

In addition, these colleges are for adults only rather than young students just graduating from the public school system, and all classes are taught in the evening. The traditional university entrance examination has been waived for these students. Unlike institutions of higher education in the United States, 75% of the regular tuition cost for these students is provided by the state. A typical Chinese approach to reinforcement is evident in that each disabled student receives the equivalent of about two months' salary as a "bonus" for graduating (Li, 1988).

Currently, disabled college students are facing some problems of transition similar to their American counterparts. Although they receive an official diploma from the university, it is not recognized by their employers. Therefore, they do not get improved wages or job descriptions based upon their level of educational attainment. It should be noted, however, that many nondisabled Chinese university students have also discovered that education does not necessarily improve their lifestyle, wages, or job options.

THE FUTURE

The constitution of the People's Republic of China calls for the government to meet the educational, living, and employment needs of the handicapped. Between its founding in 1949 and the end of the Cultural Revolution in 1978, China's economic and political problems prevented the development of services to the disabled (Chen, 1988). The fact that fewer than 1000 disabled students enter college each year (Education Improves for the Handicapped, 1988) must be seen in light of a special education system that is less than 10 years old. Recent data indicate that only 1.1% (52,800) of the estimated 4,720,300 handicapped children in China are receiving educational services (Chen, 1988). Furthermore, 70% of China's almost 51 million handicapped adults are illiterate and have difficulty finding employment (Guo, 1988).

China has gotten a very late start in providing services to people with disabilities. As a result of the closing of schools and the attacks on teachers and intellectuals during the Cultural Revolution, the country's attempts to provide even a basic education for its 300 million children are facing considerable obstacles. In spite of these limitations, committed educators and advocates, including China's *only* doctoral level special educator, are making significant changes. At the first national special education conference held in November 1988, the following national policies were promulgated:

1. Handicapped people have the right to preschool, primary, secondary, postsecondary, and adult education.
2. After completing 9 years of compulsory education, people with handicaps should have the same access to vocational, technical, and postsecondary education as others.
3. Prior to leaving school, a transition meeting should be held to plan future job placement or training needs.
4. Each community should provide a center to help handicapped citizens prepare for a job, get vocational training, and find a job.

Young people with disabilities are now receiving special training to prepare them for next year's national university entrance exams. Some well known and prestigious universities, such as the People's University of China, Changchun University, and Beijing Economic Institute, have agreed to accept "qualified" disabled students who have passed their entrance examinations (Li, 1988). In fact, there are now more than 3000 handicapped people receiving postsecondary education (Zhang, 1988). In the United States, we have seen how successful and vocal college students with disabilities have fostered effective postsecondary programs. A college student at Zhongshan Institute, Li Jiefa, has called for the government to "set up laws and regulations to guarantee the welfare of the disabled" (Li, 1988). With such encouragement there is certainly hope that postsecondary programs for students with disabilities in China will grow both in number and quality.

IMPLICATIONS

This brief review of the beginning of postsecondary programming for students with disabilities in China should remind us of how far we've come. On the other hand, we could consider emulating a Chinese law that provides a tax deduction for any organization hiring disabled workers or their plan to merge regular and special education teacher training. At this time, I would like to suggest that we broaden our horizons.

AHSSPPE essentially serves a consituency in the United States and Canada. When one sees needs and development so parallel to ours, in a country so different, it seems clear that there must be countries all over the world in various stages of developing postsecondary options for students with disabilities. Although AHSSPPE is only 10 years old, its members have great experience dealing with problems of policy, regulations, admissions, program implementation, and so on. An example of what I'm suggesting relates to the issue of physical accessibility. China is beginning an incredible construction effort. Everywhere one goes in China, construction cranes and building sites are evident. It is not uncommon to see five or six large buildings going up within eye's view at any one time. There are many places in China where entire cities of more than a million people will rise from fields during the next decade. However, I don't know of anyone calling for public facilities or housing that is accessible to people with mobility impairments. I doubt that there are people in China who can write accessibility regulations, who know what accessibility means for different disabilities, or who can plan and build accessible facilities. Every time I teach at Henan Teachers' University I think about the new building I walk into, up nine steps (none of which are uniform in terms of height or depth), and I enter a large lecture hall with a very steep concrete incline and no handrail. I don't believe there are many people in China who would look at that facility with the same insight as an AHSSPPE member.

RECOMMENDATIONS

I am calling for AHSSPPE members to go forth into the world to teach and publish and share information on postsecondary programming for people with disabilities (with apologies to Mark 16:15). It is encouraging that many countries look to foreign "experts" so they can learn from others' mistakes rather than repeat them. They are seeking advice and are often ready to do what is recommended (within fiscal and cultural realities).

I encourage AHSSPPE leadership to seek out contacts with related organizations in other countries. The sharing of publications and resources could draw new "international" members and foster opportunities for technical assistance. AHSSPPE members, whether traveling for pleasure or as part of an educational exchange or in a professional role, should seek out information about postsecondary services for people with disabilities. Government officials and public school and college personnel might respond to carefully worded questions.

A more difficult task would be to contact disability advocacy groups or organizations in order to share problems and issues of mutual interest. For example, while in China I have been able to do the first inservice training of special education administrators ever undertaken. I completed 30 hours of training for 100 school and provincial leaders from nine provinces. I was able to tell them how to implement the new national special education policies. I also was able to talk with more than 40 college administrators about accessibility. Even more exciting was the opportunity to help in the development of national policy, including the recent statement that future schools should be built without physical barriers preventing access to the handicapped. Upon my return to the United States I will be coordinating a joint U.S.–China graduate program to train special education teacher educators in China.

It should be obvious that this international experience has been both personally rewarding and professionally productive. Although I am *not* suggesting that AHSSPPE needs an international Special Interest Group, a session at future conferences during which we discuss postsecondary programming for disabled students from a worldwide vantage point would be most enlightening. Until a more formal opportunity presents itself, however, I would appreciate hearing from colleagues with an international perspective.

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Library Orientation: Intervention Strategies for Students with Learning Disabilities

Rebecca Adler, *Coordinator, Libarary/Media, The College of Staten Island*

ABSTRACT

The problems of students with learning disabilities are becoming widespread on our nation's campuses. In an effort to comply with government regulations, higher education programs have been designed to help these students succeed in college. Many college LD programs involve the teamwork of interested faculty from a variety of academic disciplines. However, academic librarians have not actively participated in this effort. This article addresses the problems encountered by students with learning disabilities when using the college library. It discusses the traditional library lecture, the Library of Congress classification system, text features, and the location of materials. It then goes on to examine the use of educational interventions in developing a special library orientation program for students with learning disabilities.

The past 12 years have been witness to an increased awareness of the problems and successes of learning disabled students attending colleges and universities. There has been a proliferation of academic programs across the country providing support services in compliance with Section 504 of the Rehabilitation Act of 1973. Elaborated upon in 1977, the law requires academic institutions receiving some form of federal assistance to establish "necessary modifications" that will prevent the exclusion of students with learning disabilities from achieving academic fulfillment. Thus began major efforts by many colleges to provide counseling, basic skills remediation, and subject-area tutoring. However, Suarez (1985) found that academic librarians' participation in these remedial programs has been meager and that little has been done in working specifically with programs designed for students with learning disabilities. The library, an intrinsic experience in a student's education, has been continually overlooked as an active resource providing a support service. With the intricacies of the library's organizational system and the diversity of its materials, the library environment may be perceived as quite threatening by students with learning disabilities. Depending upon the extent of a student's disability, the time spent researching a topic can seem insurmountable. The student may leave frustrated and unmotivated to use the library in the future.

This article will illustrate some of the difficulties students with learning disabilities encounter when using the academic library. In addition, it will provide a fundamental framework toward developing a special library orientation program for students with learning disabilities. This specialized orientation program, based upon tradiational practices in bibliographic instruction, proposes the use of educational interventions in library instruction. These interventions include a learning strategies approach as well as the use of compensatory strategies. With this method, librarians are able to promote attitudes and skills that will play a vital role in both the academic success and independent life-long learning of individuals with learning disabilities.

THE STUDENT BODY WITH LEARNING DISABILITIES

In 1978 the annual survey "American Freshman: National Norms" indicated that 4.7% of college freshmen who reported having a disability declared a learning disability. In 1985, the survey revealed that 14.3% of college freshmen who reported having a disability reported a learning disability (HEATH Resource Center, 1986). Although there is much controversy over the definition, criteria, and identification of students with learning disabilities, these statistics do indicate a growing population on our campuses, and librarians can no longer afford to remain unaware of these students. More importantly, librarians should become a part of the interdisciplinary team of professionals that may include an LD specialist, counselors, psychologists, reading specialists, and subject-area faculty. Together, this team can strive to lessen student difficulties through a comprehensive program.

Learning disability is a term used to designate a wide range of conditions affecting a rather heterogeneous group. Although generalizations are difficult to make, students so identified have a variety of problems in acquiring, storing, or retrieving information. It is interesting to note that it is in these very areas that a librarian's professional strengths are to be found. Therefore, librarians should be very capable of understanding the cognitive needs of students with learning disabilities.

Learning disabled students enrolled in many colleges have average or above average intelligence. However, Mangrum and Strichart (1984) found that in college programs where IQ is not considered a relative factor for academic success, students' reported mean IQ scores were considerably low. Nevertheless, it is appropriate to conclude that generalizations concerning the overall cognitive ability of students with learning disabilities are extremely difficult to make. These students are admitted into college based upon their potential to succeed. Students with learning disabilities have the ability to learn, but their difficulty in processing information causes them to learn differently. Some individuals learn much better by reading information, while others learn by a visual representation or an auditory approach. For many students, effective learning involves a combination of approaches. In fact, educational psychologists have long been aware of learning differences in all individuals. Gardner (1984) discussed intelligence in terms of intellectual strengths and proposed a theory of multiple intelligence in which individual strengths may be found in linguistic, logical-mathematic, musical, bodily-kinesthetic, interpersonal, and intrapersonal intelligence. It is this kind of multifaceted understanding of intelligence that will enable librarians to understand students who have different learning styles.

LITERARY PROBLEMS UNIQUE TO STUDENTS WITH LEARNING DISABILITIES

Auditory Problems and the Library Lecture

In the library, students with learning disabilities can encounter many problems depending upon their particular difficulty with processing information. Students with auditory perception problems cannot accurately interpret information received through the ears. Often similar-sounding words cannot be differentiated (e.g., "seventeen minutes" is interpreted as "seventy"), and some students have difficulty hearing sounds in the correct order, for instance, hearing "ninety-four" instead of "forty-nine" (Scheiber & Talpers, 1985). Others have difficulty hearing a sound over background noise and easily become distracted while studying or listening to a lecture. The traditional library orientation lecture lasts anywhere from 45 minutes to an hour. The librarian often expects the students to absorb auditorially a great deal of information about the card catalog, general works, reference works, and periodicals. Although print handouts and overhead projectors may be used, students' attention spans tend to wane when new information is presented rapidly.

It would be best for these students if the librarian presents information simply and concisely. The use of lengthy sentences and abstruse vocabulary should be avoided unless new terms are part of the instruction. Often times, important concepts need to be clarified by presenting them several times using different wording and examples. To sustain the students' attention, it is advisable for the librarian to use voice inflection, eye contact, and appropriate movement to emphasize significant points.

Visual Perception Problems and the Library of Congress

Those students with visual perception problems (dyslexia) have difficulty taking information in through the sense of sight or processing that information. HEATH Resource Center (1985–1986) reported that many students, when reading, may not be able to perceive the ends of words or may create their own spacing between words. For example, "was organized" may be perceived as "wa sorganized." HEATH also states that for some students, similar letters such as *b* and *d* or *p* and *q* as well as similar numbers, such as *3* and *8*, *6* and *9*, can become confusing or reversed in order. Therefore, the Library of Congress classification system, which uses both letters of the alphabet and numerals, can cause the student with learning disabilities a great deal of confusion.

The students can benefit from understanding the Library of Congress broad subject divisions (A–Z), as well as a way to discover a personal adaptation for accurately transcribing the somewhat lengthy Library of Congress call number. These personal adaptations may be based upon visual cuing techniques such as boxing and underlining, which can help the student isolate terms and lessen confusion. In addition, the cards themselves, filled with detailed bibliographic information, need to be carefully analyzed, emphasizing that information that is pertinent to accessing the proper work, while minimizing what can be considered clutter. The card catalog drawers can also be disturbing. The drawers may not be labeled in clear block letters, and its alphabetical organization—arranged sequentially down and up instead of across—needs to be systematically demonstrated. Shelf labels that reflect the actual physical locations of materials must also be in clear block letters, designating the appropriate range of titles.

Students with learning disabilities need a multisensory approach to feel confident in knowing exactly where materials are located. Audio tapes and visuals such as a good map or slides can further facilitate the location of materials.

The Sequencing of Information and the Structure of Text

An additional major learning problem for students with learning disabilities involves the sequencing of information. They may have difficulty understanding the structure or organization of a lecture, a book, or a reading passage. This reflects an inability to understand the relationship between the main idea and subordinate ideas or how the parts relate to the whole (Scheiber & Talpers, 1985; Seidenberg, 1986). They often get entangled with trivialities. Typical library instruction assumes that students using print materials understand the meaning of a table of contents, indexes, boldfaced headings, italicized words, and contrasting type. This is often not the case, especially for students with learning disabilities. Furthermore, some students may have debilitating memory problems, unable to retrieve or apply information learned in one task to another a day or 2 later.

THE SPECIAL LIBRARY ORIENTATION PROGRAM

The goal of a special library orientation program is to enable students with learning disabilities to successfully generalize their library skills so that they may be applied to other information situations and settings over time. Traditional library instruction often appears too abstract, with little emphasis on the actual "doing" activities. A student may be taught to use a source for an immediate library assignment but often cannot apply that very skill to a different assignment required later on.

CLASSROOM FORMAT

In order to implement the program it is necessary for the librarian to create an environment in which students with learning disabilities can work independently, know when they need assistance, and actively participate in librarian–student interactions.

The classroom environment that facilitates the goal of the program requires the librarian to meet regularly with a small group of students with learning disabilities. The librarian can prepare assignments with exercises that develop a gradual understanding of the basic tools supported with hands on experience. Such a procedure requires an ongoing interactive dialogue among the students and the librarian so that the students may express their understanding of the material as well as which modifications are useful and which are not. Individual conferences should also be available to guide students to the proper resources and monitor their understanding of the materials discussed during instruction. For each session, it is necessary to incorporate a review of previous material, a preview of material to be presented, and self-questioning techniques so that the student becomes more cognizant of his or her own thinking processes and learning difficulties. It is important to note that the librarian, in presenting library instruction, may have to provide the written exercise in large print in order to minimize clutter on the page. A device known as a *closed circuit television print enlarger*, available in many college libraries, should be promoted for this use. If available, the device can enlarge the printed word up to 60× and aid the student with learning disabilities by focusing on a specific section of text. The librarian may also have to resort to other teaching modalities (visual and auditory) in order to facilitate comprehension of certain concepts. (This will be discussed as a compensatory strategy later in the article.)

It is imperative that the librarian present all information concisely with the proper sequential steps for the students to follow. Students with learning disabilities often overplan or underplan their time because they do not approach the library research activity with the correct procedures. They have not mastered the proper succession of steps to acquire the necessary skills that would enable them to complete a given task. For example, some students will spend needless time looking for an article by perusing the journals in the particular field instead of consulting an appropriate index.

EDUCATIONAL INTERVENTIONS—THE LEARNING STRATEGIES APPROACH

Library instruction not only should teach the use of specific types of tools, but also develop in the student an ability to invent strategies when facing new resources found in libraries and other types of information centers. The primary instructional method for the Special Library Orientation Program involves the use of educational interventions that go beyond basic tutorial remediation. One type of educational intervention is known as a *learning strategies* approach. Learning strategies are techniques and procedures designed to aid students in acquiring, storing, and retrieving information across different situations and settings. The learning strategies approach places the responsibility for learning on the student, making the student an active participant in processing the information needed to complete a task (Schumaker, Deshler, Alley, & Warner, 1983).

Instructional emphasis should be placed on information storage techniques the student can apply to a variety of contexts. Meaningful paired associations are found throughout the information environment. For example, the name of the journal, volume, number, page, and date are always linked together in some form in a citation. After the students feel comfortable with, for example, the Wilson Indexes, using the same format, they can apply these associations to other indexes and their citations. In addition, use of mnemonics should be encouraged. Many libraries divide the card catalog into two sections: an author/title section and a subject section. Students often become confused about these access points. A simple mnemonic device such as "Always The Same" (indicating author, title, subject access points found universally in libraries, whether in card catalogs or book format), can aid memory retention.

Another major focus of this instruction should be the structure of text and the logical organization of reading material. Research findings indicate that text structure increases learning when the learner is aware of text features and can use them to facilitate comprehension (Seidenberg, 1986). Text features include the title, table of contents, chapter and subchapter headings, subject headings, and indexes, as well as clues in the text such as boldfaced headings, contrasting type, and italicized words. The librarian should approach all reference materials with their particular structures in mind so that the student with a learning disability becomes quite familiar with significant features that frequently appear in various sources. Students can learn about the common characteristics of books and how to apply this information to a book never seen before. In addition, the librarian ought to analyze the structural composition of some of the reading material selected from a particular citation. Questions should not be directed solely at content, but at how the structural parts relate to the content. For example, indicate how a subheading reflects the title. Even though students may be taught to evaluate the preliminary research value of a resource through its citation (title, name of journal or book, number of pages, evidence of documentation), it is only upon observation that they can discern its relevance for a topic. Students who have an extended understanding of the structural features of the text will be able to skim the material for relevant information. Those who are lacking in this skill spend needless time in irrelevant perusal.

COMPENSATORY STRATEGIES

A second educational intervention that can be used by the Special Library Orientation Program is known as a *compensatory strategy*. These strategies are instructional formats that allow the student to circumvent a disability in order to acquire information (Vogel, 1982). The compensatory approach attempts to modify or change the formats of instruction or instructional materials in order to facilitate the acquisition of information. The most common examples of this approach are audio tapes of texts and video tapes of lectures. Libraries that have media centers as part of their service are obviously more suitable in presenting compensatory strategies. The library/media center can provide students with access to nonprint materials such as video tapes, films, filmstrips, slides, audio tapes, and recordings for a variety of academic disciplines. In this way, students may supplement their reading material with information received visually or auditorially. A spoken recording of a play heard simultaneously while reading the text can help facilitate both the reading and retention of information by dyslexic students who have good auditory skills. If the media center has a production unit, it can generate informational slides, audio tapes, or video tapes on the use of the library, detailing its physical layout, use of the card catalog, or use of specific reference tools. At times, the center may also audiotape exam questions as well as important handouts or reprints for a particular class or department.

Libraries that do not have media centers under their jurisdiction should not feel excluded from participating with this strategy. Librarians still have the responsibility to disseminate information on compensatory resources available on and off campus. Since the most frequently used instructional format for students with learning disabilities has and continues to be audio tapes, librarians can provide applications and brochures for the Recordings for the Blind, as well as the Talking Book Program, from the Library of Congress. Students are eligible for these programs as long as the learning disability is physically based, and they are certified by a physician. Both resources require a four-track playback tape recorder, which is available to eligible borrowers from the regional branches of the Library of Congress.

Compensatory strategies have been criticized in recent research for their inability to make the student an active participant in the learning process (Seidenberg, 1986). Although they may produce some immediate short-term benefits, they do not encourage independent learning skills that are necessary to succeed in a world of primarily print-oriented information. However, this does not depreciate the value of the use of media as a viable strategy for aiding the learning disabled student. Because libraries in conjunction with media services can offer a variety of approaches, each student should have the right to develop his or her unique capacity to learn with a combination of methods.

CONCLUSION

This article has described certain practices and functions applicable to a program alleviating the difficulties of students with learning disabilities in the library. Full implementation of such a program requires the collaboration of the library staff and the office of disabled student services. The office of disabled student services can provide the librarian with much needed information during the planning of the program. Besides providing a list of students who may benefit from such a program, the counselors of disabled students can provide detailed information on the student's learning strengths and weaknesses and how well the student has compensated in certain academic areas.

If such an orientation program cannot be formally established, elements of it can be independently used in the library setting. Librarians have a natural proclivity toward working with students with learning disabilities because, as professionals in the information field, they are skilled with certain cognitive competencies. Librarians are organized, have clarity of expression, can control the amount of information

disseminated, and can provide the user with the proper sequential steps needed to complete a task. In today's educational climate, it has become a necessity for the library to have at least one staff member who is professionally aware of this growing problem and easily accessible to the student with learning disabilities.

CONCLUSION

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Disability Simulation Using a Wheelchair Exercise

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ABSTRACT

Over the last 4 years students in disability studies courses offered at a university in the northeast were asked to participate in a wheelchair familiarity exercise. Various tasks were assigned, such as going into and out of an awkwardly accessible room, using the wheelchair lift, and riding in the building's elevators, which were not designed for wheelchair use. Each student was given a separate task and the rest of the class followed along. No assistance was allowed from class members except to avoid an accident. Afterwards the class members discussed their feelings, the reactions of people not in the class, and mobility barriers in general. Written comments were entered in journals the students were requested to compile each week. These comments show both the usefulness and the drawbacks of an attempt to simulate the experience of a disability. Conclusions are presented about the efficacy of the exercise.

Over a 4-year period, students in disability studies courses at a university in the Northeast were asked to participate in a wheelchair familiarity exercise. Various tasks were assigned to an individual student to be accomplished while in the wheelchair. These tasks consisted of such things as going into and out of an awkwardly accessible room, using the wheelchair lift at the front entrance of the building, and riding in the building's elevators, which were not designed for wheelchair use. The use of such an exercise—often called a *simulation*—has been debated. This article presents the results of a content analysis of journals (which the students were requested to keep each week) written the week after the exercise was carried out. The purpose of this article is to discuss the efficacy of the exercise as a tool for education and awareness.

The primary objection to such exercises or simulations is that they are designed to teach about dependency and not about the aid or disability (Hallenbeck, 1984). By reproducing the frustrations of being deprived of sight, hearing, or mobility without the training and socialization that minimize these problems, these exercises (it is argued by critics) reinforce harmful attitudes about disability and disabled people. Support for this position was found by Siperstein and Bak (1980). Critics of simulation point out that no one advocates blackening the skin of white people or dressing men as women in order to learn the problems faced by these groups.

Proponents of simulation exercises agree that poorly planned and inadequately structured experiences can reinforce the very attitudes they are designed to change (Jarrow, 1984). They argue that the tasks should be done in a structured situation so that the person can begin to cope with the limitations. In addition, they argue, discussions of the experience and the feelings about it are necessary. They do not say that every exercise is successful; but that, with careful planning, negative attitudes can be changed.

A review of the literature indicates a number of different methods (including simulation) are used in a variety of situations in the attempt to change negative attitudes toward disabled people (Donaldson, 1980; Wright, 1980). They divide into three main groups: (1) information is provided about disabilities and disabled people to change the cognitive component of attitudes, (2) contact with disabled people influences behavior, and (3) simulations affect the emotional aspects of attitudes.

The provision of information about disability does help in creating positive attitudes toward disabled people, especially when used with children and adolescents (Baskin & Harris, 1977; Dobo, 1982; Engel, 1980; Siperstein & Chatillon, 1982). It appears to be most effective when disabled people are involved (Evans, 1976; Kierscht & DuHoux, 1980; Kilburn, 1984; Lazar, Orpet, & Demos, 1976). Contact with disabled people (Donaldson & Martinson, 1977; Kilburn, 1984) and structured presentations on videotape (Dailey & Halpin, 1981) have produced positive changes in attitudes. Simulations are effective (Dewar, 1982; Kahan & Cator, 1984; Shortridge, 1982), especially if the person role playing a disabled individual is able to observe the reactions of observers (Clore & Jeffrey, 1972; Wilson & Acorn, 1969). A combination of all three approaches (Florian & Kehat, 1987) was found to be effective in changing only the emotional aspects of attitudes toward disabled persons. A key question in all of these studies involves the stability of the changes. Many people support the position advanced by Weinberg (1978) and others that stable attitude change occurs only after long-term, intimate contact between disabled and nondisabled people.

THE SETTING

Since 1983 courses in disability studies have been offered in a Masters in Public Administration (MPA) curriculum. The original intention of the instructor was to use the wheelchair familiarity exercise each semester. However, because of various events it could not be used in some of the semesters. Consequently the exercise has been carried out in only four semesters: the Spring Semesters of 1984, 1985, 1986, and 1988.

During the third week of the course the lecture usually covers the socialization of disabled people. Problems such as personal interaction, travel, and communication are discussed. The thread running through the lecture is that the stigmatization of disabled people makes it difficult for them to cope. After a class break each member is presented with a task to accomplish in a wheelchair. The tasks consist of such things as entering the instructor's office by unlocking the door, which sticks and is not otherwise easy to open; going in an out of a restroom or the library or the Dean's Office, all of which are awkwardly accessible; using the elevators, which are not designed for wheelchair use; using the lift at the front of the building; going through the cafeteria line; and otherwise moving about in a building that was refurbished several years ago and that meets the state Architectural Access Code on paper. At the end of each task the student gets out of the wheelchair and the next one sits down. (For many students the first task is learning how to take off the brakes.)

The instructor, who is mobility impaired from polio, walked with the rest of the class in 1984 and 1985. In 1986 and 1988 he let the students use his spare wheelchair and accompanied the class in his wheelchair. Since the class is told to observe and not to hover around the person in the wheelchair, this change did not influence the exercise.

Specific rules are presented to the class at the start of the exercise.

1. The person in the wheelchair must do everything from the chair and must not inform observers (nonclass members) that it is an exercise.
2. The class members are only to observe and are not to offer help except in a true emergency.
3. The person in the wheelchair and the class are told to observe the people around them during the exercise.
4. No one is required to participate.

The first two rules resulted in a number of reactions from observers, some of whom rush to aid the person in the wheelchair while scowling at the class members who are doing nothing. The third rule is very important in terms of the purpose of the simulation. The fourth rule has had minimal effect. However, since the exercise is not announced in advance, a person who misses class will not have a chance to participate. Only one person—who had spent time in a wheelchair due to a car accident and who had vowed never again to sit in one—has asked to be excused from the exercise. Some class members have left early and thus did not participate.

THE DATA

During the four semesters in which the wheelchair familiarity exercise was used, 78 students were enrolled (45 women and 33 men). There were 4 international students and 11 disabled persons, none of whom were severely disabled. The mean age was 29.32 (standard deviation of 5.41), with the youngest member of the sample being 23 and the oldest 47. By instructor report, 67 of the 78 students were white; the 11 others were from a variety of racial and ethnic backgrounds. In addition, after the four semesters the instructor rated each student as to how comfortable he was with the student in terms of disability issues. By this very subjective rating, 38 received a label of "most comfortable"; 21, "comfortable"; 8, "neutral"; 11, "not classified."

Each student is requested, but not required, to keep a weekly journal covering what happens in class, in his or her professional life, and in his or her personal life (if relevant), all in relation to disability issues. The journals are handed in each week Completion of a minimum of weekly journals (usually 10) contributes to the grade. These journals vary considerably. Some of them are summaries of the lectures and readings. Some of them are very personal statements of feelings and experience. Confidentiality is guaranteed. It is assumed that the journals are honest attempts at communication; they are taken at face value. They tend to run from one to four handwritten pages in length though many of them are typed. Some of them come illustrated.

METHODOLOGY

After the wheelchair familiarity exercise is completed, the class members are given a chance to discuss what happened. Many statements are made about their feelings, about the reactions of the nonclass observers, and about barriers that had never before been noticed. These spoken comments and discussions were not recorded and therefore are lost. However, the journal handed in the following week usually has some comment on the exercise. It is these journals that comprise the data that were analyzed.

A content analysis was done on the journals written by the 78 students who participated in the exercise. An assertion analysis (Janis, 1965; Krippendorff, 1980) was carried out, recording the frequency of the way in which certain objects were characterized. While creating such an index does not ensure that it measures something "real," it is assumed that the journals reflect the feelings and reactions of the students. Therefore, their feelings and reactions were counted in terms of frequency of occurrence.

A count was made of each positive, neutral, and negative reference toward the exercise, toward a wheelchair, toward disabled persons, toward the writer of the journal (the student), toward the observers, and toward the obstacles encountered. A positive reference was one that was supportive or accepting. A negative reference was one that was hostile or rejecting. A neutral reference was a mention without positive or negative connotation. Any reference toward the exercise that stated that it was educational or insightful was counted as positive even if it had been a painful experience. A typical positive reference to the exercise was that it was fun, to the wheelchair was that it was helpful, to disabled people was that the student appreciated the task of confronting barriers, to the student was that he or she was excited, to the observers was that they were helpful, and to the obstacles was that they were tough. A typical negative reference to the exercise was that it was fearful, to the wheelchair was that it was demeaning, to disabled people was that they were dependent, to the student was that he or she was anxious, to the observers was that they were rude, and to the obstacles was that they were unavoidable. For example, the phrase "an exciting experience in a wheelchair" resulted in a positive count for the exercise and for the wheelchair. The phrase "[it] made me again fear the possibility of becoming disabled" resulted in a negative count for the exercise and for disabled people. The sentence "The experience taught me a lot about the barriers faced by disabled people" resulted in a positive count for the experience because it taught the student something, a neutral count for the self because of the mention, a positive count for the barriers because the student learned something about them, and a positive count for disabled people because the student received some insight into their situation.

The ultimate purpose of the analysis is to measure the effect of the experience upon the student so as to judge its usefulness as a tool for education and awareness. The experience could be a good educational tool by assisting in conceptualizing the experience of being disabled (specifically, being mobility impaired). The experience could be a good awareness tool by producing the recognition that dependency is primarily an external (societal) product.

THE RESULTS

The results are shown in Table 1. The mean number of positive comments about the experience was 1.00, giving a total number of 78. That is, on the average, the students had one positive comment to make about the wheelchair familiarity exercise. The mean number of neutral comments was 0.10; the mean number of negative comments was 0.17. The mean number of positive comments about a wheelchair was 0.24. The category "wheelchair" was the only one with more neutral comments (mean of 0.26) than positive comments. The mean number of positive comments about disabled people was 0.68, and the mean number of neutral comments was 0.06. Disabled people received the lowest number of negative comments (mean of 0.04), obviously because of the subject matter of the course and possibly because the instructor is visibly disabled. The largest number of negative comments (mean of 0.30) referred to the student journal writer. The experience, the wheelchair, and the observers all virtually tied for second place in number of negative comments. Positive comments about the obstacles (mean of 0.76) came in a close second to the comments about the experience. Since the experience focused upon learning what happens when a wheelchair user encounters obstacles, this is both encouraging and expected.

The ratio between the positive and negative mean number of terms shows that in each case there were more positive terms than negative terms. Disabled people had the largest ratio (17.00), followed by the obstacles (12.67), the experience (5.88), the observers (1.67), the wheelchair (1.33), and the self (i.e., the student) (1.20). Overall the ratio of positive terms to negative terms was 3.64. That is, the wheelchair familiarity exercise produced more than three times more positive reactions than negative reactions. If just the experience itself and the obstacles are considered, then the proportion of positive reactions increases considerably.

Comments about the experience in general constituted the largest proportion (0.26), followed by comments on the obstacles (0.18). Comments about disabled people (0.16), about the wheelchair (0.14), and about the self (0.14) were close behind. Coming in last was comments about the observers (0.12). Overall there was a mean of 4.91 comments per student about the exercise, with the largest number (mean of 3.35) being positive comments.

Table 1
Content Analysis Results

	M	*SD*	Range	Sum	Ratio: 1*
Experience					5.88
Positive	1.00	1.41	4	78	
Neutral	0.10	0.35	2	8	
Negative	0.17	0.55	3	13	
Total	1.27	1.77	6	99	0.26
Wheelchair					1.33
Positive	0.24	0.56	2	19	
Neutral	0.26	0.57	3	20	
Negative	0.18	0.62	4	14	
Total	0.68	1.48	8	53	0.14
Disabled people					17.00
Positive	0.68	1.40	7	53	
Neutral	0.06	0.34	2	5	
Negative	0.04	0.19	1	3	
Total	0.78	1.67	10	61	0.16
Self					1.20
Positive	0.36	0.88	4	28	
Neutral	0.04	0.19	1	3	
Negative	0.30	0.76	4	23	
Total	0.69	1.59	7	54	0.14
Observers					1.67
Positive	0.30	0.76	3	23	
Neutral	0.13	0.37	2	10	
Negative	0.18	0.70	4	14	
Total	0.60	1.34	5	47	0.12
Obstacles					12.67
Positive	0.76	1.56	6	59	
Neutral	0.05	0.27	2	4	
Negative	0.06	0.25	1	5	
Total	0.87	1.75	7	68	0.18
TOTAL					3.64
Positive	3.35	4.73	16	261	
Neutral	0.64	1.29	7	50	
Negative	0.92	1.79	8	72	
Total	4.91	7.01	24	383	

*For overall category, ratio of mean positive terms to mean negative terms. For category totals, ratio of mean individual total terms to mean overall terms.

With additional information about the students (age, sex, race, disability, cumulative average, and citizenship) and about the classes (size, year, and course), an attempt was made to uncover associations between these variables and the results of the content analysis. A chi-square analysis, *t* tests, Pearson's *r*, and even regression analyses were carried out with little success. What associations were found showed that students who commented tended to comment on all six categories. All of the associations were either not statistically significant (alpha level of 0.05) or showed very low levels of association. A few things did emerge from the analysis. One class had a number of women who were very outspoken about the behavior of the observers, probably because of one event that happened during that exercise.

In addition, most of the 4 students who were not U.S. citizens and the 11 students who were classified as nonwhite made only positive comments, but in none of the cases was the difference sufficient to be statistically significant.

CONCLUSION

It is clear from other sources and from first-hand knowledge that exercises such as the wheelchair familiarity exercise must be structured. Good educational experiences rarely happen spontaneously. When that does occur, careful planning usually prepared the way for it. Exercises such as this one must be thought through beforehand. Consideration of the route must include a variety of obstacles and a variety of situations. If possible, each student must have a turn. However, no student should become so frustrated that he or she quits the exercise. It is very important that discussion follow the exercise and that the experience fits into an overall context—in this case a class. The participants must have the opportunity to reflect upon the experience immediately afterwards, including voicing the feelings generated by it. If possible, they must also have the chance to reflect on the experience after a longer period.

In this case of a wheelchair familiarity exercise, the content analysis showed that the ratio of positive reactions to negative reactions was 6 to 1 for the experience itself. There was a much higher ratio regarding disabled people, but it was undoubtedly inflated due to the instructor's mobility limitation. A large number of comments (almost 5 on the average) was generated by the exercise, with a positive to negative ratio of better than 3.5 to 1. The exercise was successful both in terms of generating comments and in producing a positive effect. As one of the students wrote in a later journal: "Looking back over this past semester at Suffolk, I remember the class in which we all had to take a turn in the wheelchair. That was by far the best exercise we did in the class. It showed us how it felt to be in the chair and how people reacted to people in a wheelchair. . . . I would urge you in the future to continue the exercise; it is a great experience." The other student journals clearly support this conclusion.

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Sex Group Membership as a Confounding Factor in Handicapped Students' GRE General Test Performance

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ABSTRACT

Differences in the performance of handicapped and nonhandicapped students on the GRE General Test as a function of sex group composition were investigated. Hierarchical multiple regression analyses were conducted regressing General Test scores on sex and handicapped group membership, and adjustments to these scores were computed. The resulting adjustments had only minimal effects on handicapped/nonhandicapped mean score differences, suggesting that these disparities cannot be ascribed to differences in sex group distributions. Other plausible explanations for observed score disparities between handicapped and nonhandicapped groups are discussed.

Handicapped students often perform differently from nondisabled students on admissions tests (Bennett & Ragosta, 1985). On the Scholastic Aptitude Test (SAT), for example, learning disabled examinees typically perform .5 standard deviations below the nonhandicapped group mean whereas deaf examinees perform 1 standard deviation below the mean. On the Graduate Record Examinations General Test, differences also are evident. In one analysis, physically handicapped students scored .4 standard deviations below their nondisabled peers on the Quantitative scale and .31 below on the Analytical scale (Bennett, Rock, & Jirele, 1987).

The causes of these differences in performances are not always easy to establish. Although validity studies suggest that some portion of those observed score disparities may be due to differences in developed ability (Bennett, Rock, & Kaplan, 1987; Rock, Bennett, & Jirele, 1988; Willingham et al., 1988), differences in the subgroups of students taking admissions tests may also play a role. For example, it is well known that the composition of some handicapped populations (e.g., those with learning disabilities) differs dramatically in sex group membership from that of the nondisabled population and, further, that such membership is associated with differences in test score. In national samples taking the Graduate Record Examinations General Test during the October 1981 to June 1984 period, females typically attained scores about .6 standard deviation units lower than males on the Quantitative scale, though they achieved mean scores generally similar to males on the

Verbal and on the Analytical scales (Goodison, 1983; Smith, 1984, 1985). As such, a handicapped group may appear to perform differently simply because its sex composition deviates from the base group.

Given the effect of sex differences on test performance, it is important to ask whether observed score discrepancies between handicapped and nonhandicapped groups can be accounted for by these differences. This study examined the effect of sex differences for handicapped and nonhandicapped students taking the Graduate Record Examinations General Test.

METHOD

Subjects

Handicapped Examinees

Subjects for the study were those participating in a series of investigations of the psychometric characteristics of the General Test with handicapped students (Bennett, Rock, & Jirele, 1987; Rock et al., 1988). Samples for the series were selected from a pool of 14,142 handicapped examinees taking the General Test in domestic administrations from October 1981 through June 1984. The selection process involved four steps. First, students were selected who took General Test form C-3DGR3 in either continuously available special administrations or nationally under standardized conditions in October 1981 or April 1982. Form C-3DGR3 was selected because it was the only form used in both special and national administrations during this period. Approximately 1,170 disabled students took this form.

Second, to avoid confounding differences in the operation of the test owing to handicap with those due to language, 296 examinees were eliminated because their proficiency in English was questionable. These examinees consisted of (a) noncitizens, (b) those with unknown citizenship who indicated on the GRE registration form that they communicated better in a language other than English or who failed to respond to the language question, and (c) citizens indicating that English was not their best language of communication.

Third, the remaining 873 students were classified by self-reported disability and by test administration format (e.g., visually impaired students taking the braille edition). Finally, those classifications with sample sizes equal to or greater than 100 were selected for analysis. These classifications were visually impaired students taking the regular-type edition in a standard, national administration (n = 186), visually impaired students taking large-type, extended-time administrations (n = 151), and physically handicapped students taking the regular-type edition in a national administration (n = 105).

Nonhandicapped Examinees

A reference sample of 500 examinees was randomly drawn from the population of 20,499 individuals taking C-3DGR3 under typical testing conditions in October 1981 and April 1982. This group took the General Test concurrently with visually impaired and physically handicapped students participating in the national administration program (visually impaired students taking the large-type examination received individual administrations of the form spread over the October 1981 to June 1984 period). As with the handicapped samples, students with questionable English language competency were excluded from the reference groups.

Table 1 presents descriptive statistics for the four study groups. As the table shows, the reference group achieved mean scores of 498 for Verbal, 517 for Quantitative, and 514 for Analytical. With three exceptions, handicapped students performed similarly to the reference group. These exceptions were physically handicapped students, who performed substantially lower on the Quantitative and Analytical scales, and the visually impaired–large-type group, which performed considerably higher on Analytical.

Table 1
Background Data for Study Samples

	Group			
Characteristic	**NH**	**VIL**	**VIN**	**PHN**
Sample size	500	151	186	105
GRE Verbal				
M	498	513	486	493
SD	124	109	120	117
GRE Quantitative				
M	517	512	507	467
SD	135	137	131	130
GRE Analytical				
M	514	559	503	481
SD	131	154	135	120
Percentage Male	40	35	43	51

Note: NH = nonhandicapped students taking form C-3DGR3 in October 1981 or April 1982; VIL = visually impaired students taking large-type, special administrations of C-3DGR3 between October 1981 and June 1984; VIN = visually impaired students taking a standard administration of form C-3DGR3 in October 1981 or April 1982; PHN = physically handicapped students taking a standard administration of form C-3DGR3 in October 1981 or April 1982.

With respect to sex group membership, the physically handicapped group had a substantial overrepresentation of males relative to the reference group, while the visually impaired–large-type sample had a substantial underrepresentation. Given these differences, one might expect to find larger Quantitative score disparities in the physically handicapped sample and smaller ones for the visually impaired group after correcting for sex composition.

Table 2 presents mean General Test scores for each group broken down by sex. As expected, the largest discrepancies between sex groups are for the Quantitative scale.

Procedure

To determine the contributions of sex and handicap to total score, a hierarchical multiple regression analysis was conducted. This analysis produced the proportions

Table 2
Means and Standard Deviations of General Test Scores Broken Down by Sex Group Membership

Group	Sex Group			
	Male		Female	
	M	*SD*	*M*	*SD*
NH				
Verbal	512	120	489	126
Quantitative	562	125	487	133
Analytical	524	126	508	133
VIL				
Verbal	508	123	517	102
Quantitative	546	133	495	135
Analytical	565	152	557	157
VIN				
Verbal	501	120	475	121
Quantitative	539	142	484	119
Analytical	503	136	504	135
PHN				
Verbal	500	118	490	114
Quantitative	486	142	454	113
Analytical	480	114	477	122

of variance in total score accounted for by these variables. These proportions suggest how important sex and handicapped group membership are in determining General Test performance. The analysis also produced, in the form of the raw score regression weights, the adjusted differences in test score with selected variables held constant. The differences in General Test score between handicapped and nonhandicapped groups after controlling for sex group membership were derived from these regression weights.

In the analysis, the total scale score for each General Test scale was regressed on sex; then on sex and group membership based on the presence or absence of handicap; and finally on sex, group membership, and the interaction between the two. Adding variables to the analysis sequentially (i.e., first sex, then sex and handicap) permitted the effects on test score of each new variable to be estimated. Sex group was entered into the regression before handicapped group membership because one's sex group is often determined first (i.e., at conception), and because the association between sex group membership and test score is well-documented (Goodison, 1983; Smith, 1984, 1985). These regressions were run separately for each handicapped group combined with the reference sample.

RESULTS

Correlations between sex and handicapped/nonhandicapped group membership were nonsignificant: −.04 (two-tailed $t = 1.02$, $df = 648$, $p > .05$) for the large-type/nonhandicapped combined group, .02 ($t = .52$, $df = 684$, $p > .05$) for the visually impaired national/nonhandicapped sample, and .08 ($t = 1.97$, $df = 103$, $p > .05$) for the physically handicapped/nonhandicapped group. These values suggest that handicap and sex are independent in these groups.

Table 3 presents the relationship between test scores and membership in sex and handicapped groups in variance terms. In the table, the predictor variables entered into the regression are listed in their order of entry. These are followed by the proportion of variance in total score explained by each set of variables (R^2), and the increase in explained variance over that accounted for by the previous set of variables (the increment in R^2).

Table 3

Relationship Between GRE General Test Score and Membership in Sex and Handicapped Groups

	VIL/NH ($n = 650$)		VIN/NH ($n = 686$)		PHN/NH ($n = 605$)	
Independent Variable	**R^2**	**Increment in R^2**	**R^2**	**Increment in R^2**	**R^2**	**Increment in R^2**
			Verbal			
Sex	.004	.004	.009	.009**	.007	.007*
Sex & Handicap Group	.007	.003	.011	.002	.007	.000
Sex & Group & Sex × Group	.010	.003	.011	.000	.008	.001
			Quantitative			
Sex	.064	.064***	.065	.065***	.055	.055***
Sex & Handicap Group	.064	.000	.067	.002	.078	.023***
Sex & Group & Sex × Group	.065	.001	.068	.001	.082	.004
			Analytical			
Sex	.002	.002	.002	.002	.002	.002
Sex & Handicap Group	.022	.020***	.003	.001	.014	.012**
Sex & Group & Sex × Group	.022	.000	.004	.001	.014	.000

$^{*}p < .05$
$^{**}p < .01$
$^{***}p < .001$

As the table shows, even when statistically significant, the amounts of variance in total score accounted for by the independent variables are small, ranging from 0 to about 7%. The largest increments in variance accounted for are due to sex group membership and occur for the Quantitative scale, a finding consistent with documented differences in the performance of sex groups on this scale. The increase over sex in explained variance due to handicap is statistically significant in those cases where the scores of disabled students are most discrepant from the reference group (i.e., for physically handicapped students on Quantitative and Analytical, and for visually impaired–large-type examinees on Analytical). However, the magnitude of this increase is extremely small, typically under three-tenths of one percent. Finally, adding the sex-by-handicap interaction to the regression accounts for no further variance, suggesting that sex group is not more or less important in its relationship with total score for handicapped than it is for nondisabled students.

Table 4 presents unadjusted mean score differences and differences adjusted for sex group membership. Given the absence of interaction effects and the independence of the sex and handicap variables, the regression based on the main effects model (i.e., sex, handicapped group membership) was used to compute score adjustments. These adjustments were computed for the difference in mean test scores between handicapped and nonhandicapped groups controlling for sex group membership.

The differences between the adjusted and unadjusted scores for those handicapped groups with sex distributions that vary from the reference group are of particular interest. On Quantitative scores, the physically handicapped (PHN) group obtained an unadjusted score 50 points below the nondisabled mean. Because this group was disproportionately male relative to the reference sample, this score difference might be larger, given equal sex distributions. As Table 4 shows, when sex was controlled, the difference between the handicapped and reference groups increased marginally to 55 points. Hence, differences in sex group membership would appear to be slightly inflating the Quantitative scores of the physically handicapped sample.

The second group with a sex distribution different from the reference group was the visually handicapped–large-type (VIL) group. On Quantitative scores, this group achieved an unadjusted mean score 5 points lower than the reference sample. Since the visually impaired group was more female than the reference sample, it is possible that this minimal difference is primarily due to differences in sex distribution. As Table 4 indicates, when sex was held constant, this difference shrunk somewhat, to 1 point.

Table 4
Mean Scale Score Differences Unadjusted and Adjusted for Sex Group Membership

Handicapped/ Nonhandicapped Difference	Combined Group		
	VIL/NH	VIN/NH	PHN/NH
		Verbal	
Unadjusted	15	−12	−5
Adjusted	16	−12	−6
		Quantitative	
Unadjusted	−5	−10	−50
Adjusted	−1	−12	−55
		Analytical	
Unadjusted	45	−11	−33
Adjusted	46	−11	−37

Note: See Table 1 footnote for descriptions of groups. Positive differences favor the handicapped group.

DISCUSSION

This study examined the effect of differences in sex group membership on mean score disparities between handicapped and nonhandicapped students taking the Graduate Record Examinations General Test. For the samples studied, controlling for sex resulted in only minimal adjustments, a finding consistent with attempts to adjust minority group mean scores for background differences (e.g., Holland & Thayer, 1983). These results suggest that the observed differences in test score between handicapped and nondisabled groups were due largely to factors other than sex group membership.

What factors other than differences in sex group membership might account for the observed score differences between handicapped and nondisabled groups? Undergraduate major might seem a likely candidate because of its relationship to test score in nonhandicapped samples (Goodison, 1983; Smith, 1984, 1985) and because handicapped students taking the General Test diverge from their peers on this variable (Bennett, Rock, & Jirele, 1987). Statistical explorations of the relationship between major and test score are, however, difficult, if not impossible, to justify because of the relationship's conceptually complex nature. Although sex group membership is inherent, handicapped students (like nondisabled ones) may choose a particular undergraduate major *because* they are more adept at it. Just the same, they may avoid a field because their disability makes it difficult for them to succeed. As such, it is impossible to discern whether undergraduate major is a cause or effect of the observed score differences.

A second possible explanation for observed score differences is the effect of extra time (Willingham et al., 1988). This explanation is most plausible for the substantially increased performance of visually impaired–large-type students on the Analytical scale. These students tend to complete this scale in greater proportions than their nonhandicapped peers do (Bennett, Rock, & Jirele, 1987). As a consequence, they have the opportunity to complete more items and obtain higher scores.

Third, the test may be measuring different attributes in handicapped and nonhandicapped groups (e.g., with physically handicapped students, speed of responding), a condition which might well result in different average score levels. Factor analytic research lends some support to this hypothesis for Analytical scores, which, for physically handicapped students and for visually impaired examinees taking the large type exam, do not appear to have a meaning comparable to nondisabled examinees (Rock et al., 1988).

Finally, some observed score disparities are likely due to real differences in the developed academic abilities measured by the test. The little research reported provides only limited support for this cause of score differences. While Verbal and Quantitative scores do seem to measure the same abilities in handicapped and nonhandicapped groups (Rock et al., 1988), preliminary research suggests that the predictive relationships of these scores to graduate grade point average may differ from nonhandicapped samples (Braun & Ragosta, 1986). Future research might focus on replicating these predictive differences and, if replicated, determining whether they are related to the provision of excessive extra time or to other potential sources of miscalibration of the tests involved.

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China Follow-Up: A Perspective After Tian'anmen Square

Stan Shaw, *Visiting Professor of Education, Henan Teacher's University, Xinxiang City, Peoples Republic of China, and Professor, Special Educational Psychology, The University of Connecticut.*

In a recent editorial, a Chinese periodical tried to allay the concerns of foreigners, noting, "after the tumultuous events in Beijing in late Spring and early Summer, life in the capital has returned to normal." The government justified its actions by stating that "ill-intentioned manipulators" had rebelled against the State, forcing the government to take "decisive steps on June 4 to quell it and avoid even greater disaster" (No Change in Reform and Open Policy, September, 1989, *China Reconstructs*, p. 3). Unfortunately for the Chinese government, not only was the whole world watching on television, but hundreds of thousands of Chinese experienced the exhilaration of freedom on Tian'anmen Square and millions of others across the country listened to live Voice of America and British Broadcasting Company accounts of the People's Army brutalizing the people.

None of the events of June 1989 really came as a surprise. In every private conversation I had throughout China, students and workers had complained bitterly about the suffocating control, arrogance, and corruption of the "leaders." Yet they were ardently nationalistic. The bravery of the students, the incredible numbers of people who came to Tian'anmen, and the support of the common people, however, were extraordinary. My personal vote for the Nobel Peace Prize goes to the man who stood in front of that column of tanks refusing to be intimidated (though the Nobel committee's actual selection of the Dalai Lama was certainly a brilliant reply to June 4).

The government's oppression of the pro-democracy movement was, likewise, very predictable. I recall talking with Rhona Hartman of HEATH last May. Rhona was very interested in my views of the exciting events occurring at Tien'anmen Square. My response was not very uplifting; I explained my dread of the inevitable violence and repression that would certainly be the government's reaction. My only surprise was the inordinate amount of time it took the leaders to gather support and find loyal troops to do their bidding.

This fall every college student in China faced 2 weeks of political indoctrination, including a 4-hour videotape of the government's sanitized version of June 4 on Tian'anmen Square. The Chinese, who have had 40 years to practice keeping personal ideas and feelings to themselves, have now honed that skill to an art form. Modernization and productivity are irrelevant. Ideological purity is everything.

But in spite of the bleak picture which has emerged from media reports, I am now encouraged. The daily reports from Poland, Hungary, and Czechoslovakia are portents of things to come for China. It is clear that the emergence of Poland's Solidarity movement followed by its demise in the early '80s was the precursor to its ascent to power in 1989. I expect the same result in China. Whether it will take 3 months, 3 years, or longer no one knows, but I do believe it is inevitable. While I would love to be back in China encouraging and comforting the hundreds of special education leaders and college administrators with whom I worked, it is not possible at this time. Up to this point (Fall, 1989) I have not even allowed myself the luxury of a letter to colleagues in China, fearing that correspondence from the United States could jeopardize careers. I have to assume the national special education laws promulgated in November, 1988, and plans for a special education doctoral training program in Beijing taught by U.S. professors are on the shelf.

But while we wait for some old men to move on, there *is* something to be done by those of us with an international perspective. There are thousands of Chinese students seeking postsecondary degrees across North America. Many are permanently, or at least indefinitely, separated from their relatives; in fact, many have wives and children back home. Developing relationships with these students, involving them in campus activities, seeking them out for student labor or work study jobs, or inviting them to dinner are all productive actions. For example, following our discussion of disabled students in China, a friend at an eastern university just took a job as a van driver so he could learn more about students with disabilities prior to returning to China as a college administrator.

I closed my original paper on China noting that the experience was personally and professionally rewarding. From the perspective of one year later, I can add "exciting" and "challenging" to those descriptors.

Head-Injured College Students: Prevalence, Reasons for College Withdrawal, and Suggestions from Head-Injury Rehabilitation Facilities

Cooper B. Holmes, *Emporia State University*

ABSTRACT

Noting the absence of empirical data on head-injured college students, a survey of head-injury rehabilitation facilities was conducted. Information was obtained on the percentage of clients capable of college, beginning college for the first time, returning to college after a head injury, and withdrawing from college because of injury-related factors. Reasons for client withdrawal from college and suggestions for improving the college experiences were also obtained.

Neuropsychological and head-injury rehabilitation literature present almost no discussion of the head-injured college student, though the topic of the head-injured public school student is an area of increasing interest (Begali, 1987; National Head Injury Foundation, 1985). The material that is presently available on the head-injured college student falls into the anecdotal or experiential area. Hall and DePompei (1986) presented an excellent discussion of the problems of head-injured college students. *The ABI Handbook* (Cook, 1987) and two symposium presentations (Cook, Knight, & Harrington, 1986; Cook & Knight, 1987) described the head-injury program in the California community college system. Hackler and Tobis (1983) also discussed a community college program. Savage, Cohen, Coyne, Fryer, and Harrington (1985) briefly discussed head-injured college students as part of a more general discussion, as did Bauer and Titonis (1987). Holmes (1987) presented a paper on the head-injured college student and has written a book on the topic (Holmes, 1988).

Because of the lack of empirical investigation of the head-injured college student, there is virtually no factual information, even the most basic data. We do not know how many head-injured people are in college, we do not know the frequency of the problems they face or the reasons they withdraw from college, and we do not know how many college students have an undiagnosed brain injury (or are not aware of the effects of a previous injury, especially a minor head injury). The list of what we do *not* know about the head-injured college student goes on and on.

This study is in response to the lack of empirical information about head-injured college students. Its major purpose is to present a starting point for future research. While the data presented here are interesting, they are certainly preliminary. There is no pretense that the information is definitive. The information provides insights from the professionals who work with one aspect of head-injured college students, namely, those injured severely enough to warrant rehabilitation.

METHOD

Subjects

The subjects were 16 rehabilitation facilities either exclusively designed for head-injured rehabilitation or offering a head-injured program as part of their overall services. Thirty such facilities were located from advertisements in head-injured publications or from telephone directories from all regions of the United States. Sixteen of the 30 facilities returned the survey, resulting in a return rate of 53.3%. The person completing the form was given the option of including a name and address to receive a final copy of the report. Fifteen of the 16 surveys contained a name and address, allowing the author to incidentally note that all regions of the United States were represented and that the institutions ranged from fairly new to long-established.

Instrument

A one-page six-question survey was prepared and mailed along with a cover letter and return envelope. These were addressed to the director of the head-injured program. The cover letter simply stated that the purpose of the survey was to obtain information on head-injured college students. The survey began with the statements, "Realizing that precise data are usually not available, it would be most helpful if you *provide your best estimate*. College refers to a four-year or a junior college." The items, with spaces for responses, were:

1. What percentage of your head-injured clients are capable of going to college?
2. What percentage of your clients eventually begin college for the first time?
3. Of those clients who were in college before the head injury, what percentage returned to college?

4. Of those clients who began or returned to college, what percentage ultimately dropped out because of injury related factors?
5. As far as you are aware, what were the reasons the clients withdrew from college?
6. On the back of this sheet please provide *any* suggestions you have that would improve the chances of the head-injured student successfully completing college. Please provide any other comments you would like to include.

The survey was purposefully brief to insure as great a return rate as possible. In exchange for brevity and a higher return rate, many potential questions had to be sacrificed. It would have been informative to inquire about the facility's actual census, the types of injuries represented, demographic data of the clients, and other equally important questions, but these must await further research.

Procedure

The letters, surveys, and return envelopes were mailed in October, 1987, and were returned through January, 1988. As the surveys were returned, the percentages were recorded for the first four items. The reasons for withdrawal and the suggestions for success were individually listed on common sheets and were later grouped.

RESULTS

For ease of presentation and reading, each item will be presented separately. Because some of the respondents could not complete every item, *n* is not 16 in every case.

Item 1. What percentage of your head-injured clients are capable of going to college? There were 15 responses to this item, ranging from 0 to 42%. This resulted in a mean percentage of 13.73% (*SD* = 10.97). The large variability renders the mean a distorted measure. The median of 9.89% is a better indicator of the true picture, with a 25th percentile of 4.69% and a 75th percentile of 24.58%.

Item 2. What percentage of your head-injured clients eventually begin college for the first time? There were 13 responses, with percentages ranging from 0 to 15%. The mean was 5.62% (*SD* = 5.21), but again is not as meaningful as the median of 4.75%. The 25th percentile was 0.75%, while the 75th percentile was 9.88%.

Item 3. Of those clients who were in college before the head injury, what percentage returned to college? There were 13 responses to this item, with percentages ranging from 0 to 87%. The mean was 29.38% (*SD* = 26.80), with a median of 20.25%, a 25th percentile score of 5.12%, and a 75th percentile of 39.25%.

Item 4. Of those clients who began or returned to college, what percentage ultimately dropped out because of injury-related factors? The 13 responses to this item ranged from 0 to 90%. The mean percentage was 36.00 (*SD* = 30.12). The median was 25.00%, while the 25th percentile was 9.75% and the 75th percentile was 59.25%.

Item 5. As far as you are aware, what were the reasons the clients withdrew from college? Fifty-nine separate reasons were presented, but their overlap allowed them to be grouped into four common categories. The most frequent reason for college withdrawal was difficulty keeping up with the curriculum related to impaired cognitive abilities ($n = 32$ of the 59 responses). The second most frequent reason was impairment of personal/social skills ($n = 20$). This second group included such factors as impulsivity, problems of self-esteem, social isolation, and unrealistic expectations by the client or family members. The third most frequent reason ($n = 2$) was a lack of support and remedial services in college. The fourth group, Other, consisted of 1 each of money problems, career change, physical impairment, lack of transportation, and too long in acute care.

It is apparent that the greatest reason for college withdrawal had to do with academic demands, but personality and social factors were close behind.

Item 6. On the back of this sheet please provide any suggestions you have that would improve the chances of the head-injured student successfully completing college. Forty-eight separate suggestions were offered, and these were grouped into six categories. The first category of suggestions ($n = 13$) was a thorough assessment of abilities and personality factors along with precollege and ongoing counseling. The second, equally frequent category ($n = 13$), was a well-structured college program, an integral part of which would be establishing a buddy system (selecting a person to help with coursework, scheduling, planning, and social matters). The third category ($n = 12$) was provision of specific academic services (or help for the student to secure them), such as tutoring, special laboratories (e.g., reading), and specific classroom aids such as tape-recording lectures. Fourth ($n = 7$) was gradual entry into college (e.g., auditing courses at first, carrying a light academic load, restricting social activities). Fifth ($n = 2$) was inservice training for college personnel, while 1 person suggested using the National Head Injury Foundation as a resource.

Clearly, these rehabilitation specialists are indicating that, after a careful assessment, college must be approached gradually. Once there, the student must be carefully monitored and assisted, not just in academics, but in personal and social adjustment as well.

DISCUSSION

A first caution is that the information presented in this article deals only with people whose head injuries were severe enough to warrant placement in a rehabilitation program. However, Chance (1986) has estimated that approximately 300,000 persons each year are head injured to the degree that there will be significant postinjury impairments. Using Chances' estimates and returning to the figures presented here, it is quite probable that a large number of head-injured people are not only capable of college, but are, in fact, going to college.

One can only guess how many college students and potential students have been head-injured and did not realize it or were not aware of after-effects. If this seems unlikely, note that Marshall and Marshall (1985) estimated that each year 300,000 people are *hospitalized* for *minor* head injuries. It is pure speculation as to how many people may have had a minor head injury and were *not* hospitalized or even examined! This is an important point when one realizes that Rimel, Giordini, Barth, Boll, and Jane (1981) found cognitive impairments lasting up to several months after a minor head injury (less than 20 minutes unconsciousness and brief or no hospitalization). Taking all of these estimates and facts into account, it is obvious that we are dealing with a potentially significant number of head-injured college students or head-injured persons who are contemplating college postinjury.

In terms of the types of problems the students are likely to face, the rehabilitation specialists who responded to this survey made it very clear that cognitive difficulties must be addressed on an ongoing basis. That is, the student cannot simply be tested precollege, told what his or her problems are, and left to fend for himself or herself. The specialists are also indicating that the personal and social side of college life must be addressed and monitored. This is not surprising, as many college-age people are likely to suffer frontal and temporal damage as a result of closed head injuries (i.e., damage to the areas that affect personality and social functioning).

Once the decision has been made to go to college, the rehabilitation specialists are telling us to take a slow, measured approach after carefully assessing college potential. When the student enters college he or she must be aware of the need for special services and how to obtain them (classroom help, special laboratories, counseling, for example). Although the rehabilitation respondents did not specifically mention it, I will note that the best way to begin college is to inform the office of disabled students about the problems.

It is apparent that this survey is a starting point for future research, not a thorough investigation of the area. Virtually anything mentioned here is fertile ground for research. We need to establish the actual numbers of people we are dealing with, we need to assess the types of concerns the head-injured students have, and how both the rehabilitation centers and colleges can best serve the needs of those students.

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Factors Influencing the Academic and Social Integration of Hearing Impaired College Students

Susan Foster and **Paula Brown**, *National Technical Institute for the Deaf at Rochester Institute of Technology.*

ABSTRACT

The purpose of this project was to study academic and social aspects of mainstreaming from the perspective of mainstreamed hearing impaired students. Data were collected through in-depth, semistructured interviews with 20 hearing impaired students attending Rochester Institute of Technology. While students appreciated the opportunity to attend classes with hearing peers and felt they were succeeding academically, they also experienced separation and even isolation within the mainstream class. This isolation stemmed from three major kinds of constraints, including the physical grouping of hearing impaired students, the use of support services, and students' perceptions of themselves and others. Hearing impaired students also tend to rely on social networks of hearing impaired peers and participate largely in hearing impaired clubs and social activities. Their explanations for these friendship patterns include increased opportunity to meet hearing impaired peers at RIT, ease and comfort of interaction with hearing impaired students, importance of group identification, and the negative influence of social prejudice.

The research reported in this document was produced at the National Technical Institute for the Deaf in the course of an agreement between Rochester Institute of Technology and the U.S. Department of Education.

An earlier version of this paper was presented at the annual meeting of the American Educational Research Association in New Orleans, April 7, 1988.

In the past two decades, there has been a movement toward "mainstreaming" disabled students with their nondisabled peers in a variety of educational settings. Public Law 94–142 provides guidelines for implementation of this policy in elementary and secondary schools. The passage of Section 504 of the Rehabilitation Act of 1973, as amended in 1974, provides federal requirements and guidelines regarding access by individuals with disabilities to postsecondary educational institutions.

These trends have had a significant impact on the numbers of hearing impaired people attending college. Enrollment of hearing impaired people in colleges increased from approximately 250 in 1950 to more than 8000 in 1986 (Rawlings & King, 1986). These figures indicate clearly that the issue of access is being addressed. The most pressing issues now facing postsecondary educators and administrators have to do with accommodation of hearing impaired students and the degree to which these students are successfully mainstreamed into the postsecondary school environment. These issues have a direct bearing on the quality of experience of hearing impaired people in college environments and their persistence within them.

Theoretical models designed to explain attrition within college settings (Spady, 1970; Tinto, 1975, 1987) suggest that persistence in college is related to both academic *and* social integration. For example, in describing the content of retention assessment systems, Tinto (1987) suggested that a "picture" be obtained "both of the students who enter . . . and the range of their experiences within the institution." He continued:

> That picture should detail the social as well as academic experiences of students. It should provide an image of the range of interaction patterns which arise on campus among students, faculty, and staff, especially those that occur between students and faculty. One should know of the nature of student experiences in both the formal and informal domains of the academic and social systems of the institution. Data should be collected not only on the formal attributes of participants and progress (e.g., learning gains, grades, credit hours) but also on the informal dimensions of student interactions with other persons in the academic and social communities of the college. (p. 192)

The purpose of this project has been to study the academic and social integration of hearing impaired students on one college campus (Rochester Institute of Technology, or RIT). The home of the National Technical Institute for the Deaf (NTID), RIT serves approximately 1200 hearing impaired college students. These students have opportunities for academic integration through classes with hearing RIT students, and social integration through mainstreamed residence halls and participation in a variety of extracurricular social organizations. While this project is not a study of student retention per se, it does reflect an effort to capture a piece of the "picture" described by Tinto, with the goal of improving the college experience for hearing impaired students at RIT and other postsecondary programs and increasing the likelihood that they will persist in these programs to graduation.

Historically, most efforts to describe and evaluate the effects of mainstreaming have been conducted from the perspective of the professionals, that is, teachers, counselors, and school administrators. There is less research examining the impact of mainstreaming within postsecondary settings from the perspective of the student (see, however, Saur, Layne, Hurley, & Opton, 1983). This study takes the position that students are also experts on mainstreaming, and the goal is to learn about the mainstream college experience from their perspective. In particular, the purpose of this study is to explore the degree to which hearing impaired students *see themselves as integrated*, both academically and socially, within the college environment.

Selection and Description of Informants

The term "informant" is used here in the sense of "a source of information," as described by Spradley (1979) in his discussion of research participants. All the students selected to participate in the study had previously been enrolled and taken courses in self-contained classes within the college of NTID at RIT and were currently students in good academic standing (that is, not on academic probation) in one of the other eight colleges of RIT, where they were offered a variety of support services, including interpreters, notetakers, and tutors. The 11 male and 9 female informants represented 16 different majors. Seven informants had been mainstreamed in regular classes during high school, six had attended high schools for the hearing impaired, and seven had had limited mainstreaming, with most of their core courses in self-contained classrooms.

While all of the informants had to have reached a certain level of English competency in order to enroll in one of the colleges of RIT, their English and oral/aural skills varied considerably (as based on the NTID Communication Profile Inventory; see Johnson, 1976, for details). Informants were selected to reflect a crossing of high and low English skills with high and low oral/aural skills. Seven informants had relatively high English skills (California Reading scores greater than or equal to 11.0 or Michigan Test of Language Proficiency scores greater than or equal to 85), and four of these also had high oral/aural skills (speech intelligibility and speechreading skills that would suggest minimal difficulty conversing with a hearing person in a one-to-one situation). Seven informants had relatively low English skills (California scores less than or equal to 7.9 or Michigan scores less than or equal to 65), and four of these also had low oral skills (skills that would make communication with a hearing person difficult without writing). The remaining six informants in the study fell into a middle group in terms of English and oral/aural skills.

METHODOLOGY

Qualitative research methods were used to collect and analyze data. In-depth interviews (Bogdan & Taylor, 1975; Spradley, 1979) were used to learn about the mainstream experience from the perspective of the 20 informants, each of whom was paid $10 for the time given. The interviews were semistructured in that the same "core" topics were covered in every interview. Core topics were organized under two broad areas of college experience. However, questions within core topic areas were open-ended. The first area focused on academic experiences at college. Core topics were classroom activities, relationships with teachers and other students, and the use of support services in mainstream classes. Social and extracurricular activities were the focus of the second area and included the core topics of participation in social clubs, dormitory life, college friendships, and dating.

Each interview lasted between 1 and 2 hours and was conducted using Simultaneous Communication. An interpreter holding the Comprehensive Skills Certification of the Registry of Interpreters for the Deaf was present for each interview. The interpreter's primary role was to voice the comments of informants for the purpose of recording the interview on audio tape for later transcription. In addition, he or she facilitated communication between the informant and interviewer when necessary. Data analysis involved a detailed reading of all interview transcripts by both researchers, with the goal of identifying recurring patterns and themes (Bogdan & Biklen, 1982). The results of this analysis are presented in the next section.

FINDINGS

In general, informants' comments regarding mainstreaming did not differ as a function of their descriptive characteristics, and the findings will be presented for the group as a whole. These findings have been organized within this section along two major strands. The first includes descriptions of experiences in the classroom. The second focuses on informants' descriptions of social interactions and relationships with other students outside of class.

Experiences in the Classroom

Informants were generally positive about their mainstream academic experience, especially the benefit they were deriving from it. Most said they appreciated the opportunity to enroll in the same classes as their hearing peers and acknowledged that this was due in strong part to the high level of available support, such as interpreters, tutors, and notetakers. They felt they were receiving a good education and that a college degree would help them get a good job. Many expressed satisfaction with their ability to compete with hearing students successfully. However, their descriptions also included a strong sense of separateness, of not being a full participant in the mainstream classroom. These comments reflect the idea that there is more to mainstreaming than the opportunity to access information. Informants' perceptions of their integration into the instructional milieu of mainstream classes can be described in terms of three kinds of constraints: physical, functional, and psychological.

Physical Constraints

For the informants in this study, hearing impairment was clearly not an "invisible" condition. Rather than being able to "lose themselves in the crowd," they generally reported having a very distinct, and at times even separate, presence in the classroom. Usually, this separation is necessitated by the students' need to visually access the information presented in class; that is, they need to be able to clearly see the instructor, blackboard, and interpreter. Some informants also said they sit with other hearing impaired students for companionship or mutual support. As a result, the hearing impaired students all sit together in front or to one side and form a physical entity that is an identifiable subset of the class.

Some informants felt that as members of the group they often received undue attention, while at other times they were ignored. The following quotation is illustrative:

> Well, teachers can easily notice the deaf people in the group more than the hearing. There's a lot of people in the hearing. So they know the deaf because they're signing. So the teacher has a list of names and will say the names, "The deaf are missing," and "There's a lot of deaf missing."

The separation between hearing impaired and hearing students occurred even in small classes and labs and when students are instructed to work in small groups. Informants reported that for the most part they sit and work with other hearing impaired students whenever they have a chance. Part of this is dictated by the presence of only one interpreter. The two blocks to integrated group work cited were (1) communication difficulties and (2) a perceived lack of interest on the hearing students' part in working with a hearing impaired student because it wouldn't be worth the time and effort. An example:

> The deaf people grouped together because of the ease of communication. So one thing I don't like is trying to communicate with more than one hearing person. I've never really liked sitting with a group of hearing people and trying to follow them. They jump back and forth. So I try to avoid that as much as possible. So in a group discussion, I prefer signing with deaf people signing.

However, the grouping of hearing impaired students was not without its benefits. The physical separation of hearing impaired students in many cases led to the development of a positive group identity that often formed the basis for competition, support, and friendship. In addition, the group relieved a certain burden of responsibility often experienced by a single hearing impaired student in a classroom. For example:

> I'd rather have about five or six deaf anyway because if they're not there, then I can ask the notetakers through them. Another reason, I don't have to pay attention to the interpreter all the time, one on one. With five, it's easy to look around. If it's one, I have to watch, you can't fall asleep, so to speak, I have to watch constantly. . . . If they don't show up, then maybe the interpreter's upset if I don't show up. With other students there, if they show up, then it's fine. So that makes things a little easier.

Functional Constraints

In addition to a physical separation in the classroom, nearly all the informants reported a functional separation or detachment from the ongoing dynamics of the classroom associated with the use of support services. Informants noted that having access to information is not enough to assure full participation in the learning process. In fact, most said they found it difficult to go beyond the passive role of information receivers. They described themselves as limited in their classroom participation and in their interactions with teachers and hearing students. Ironically, constraints on these interactions were closely associated with the very support services that facilitated information access, that is, the use of tutors, notetakers, and most especially, interpreters. For example, informants appreciated the benefit of notetakers, but some also said that not taking notes themselves distanced them from the information to be learned. For example:

> The interpreter is interpreting so fast, it goes right by my eyes, the notetaker doesn't have enough information written down there sometimes, then I get really stuck. Hearing people hear and understand the concept, so hear, write it down and it feels some sort of a connection to it. They feel a link with it. With the deaf where is the connection? It is tough for me to [have the notetaker] write and then hand it to me, sometimes I don't understand because I am not connected to it. If I wrote it, I would understand it better, that is difficult.

Informants reported limited use of tutoring services. However, those who did use tutors usually described them as more available and more likely to have skills communicating with hearing impaired students than their classroom instructors. As a result, some informants said they would seek help from tutors rather than face difficult or strained communication with an instructor. This in turn tended to reinforce their sense of detachment from the instructor and the typical teaching/learning process.

While most informants felt they received much more information with an interpreter in class than they would without such support, their comments also suggest that communication through a third party cannot compare with the direct communication enjoyed by hearing students or by hearing impaired students in classes where the instructor signs for him or herself. For example:

> Sometimes, when I talk with the teacher and the interpreter has a tough time translating from ASL to speech, you see, that's awkward. The interpreter is fine at going from speaking to ASL, that's easy. But really, I feel that the interpreter should not influence my communication relationship with the teacher. It keeps going back and forth through that person. I just don't like to use an interpreter, I would prefer to have communication with the professors on my own and develop a relationship, not to keep going through somebody else.

In addition to creating a barrier between the instructor and student, the reliance on interpreters was frequently seen as a constraint on classroom participation. Interpreter lag was the most frequently cited reason for not participating in discussions or asking/answering questions in class. In the following quotation, an informant describes how the time lapse between an instructor's verbal message and the interpreter's signed presentation of the message constrains his participation in class:

> Sometimes I wonder if my questions are on the point or off the point or if that's not what he's talking about at all, he's talking about something else altogether. It's tough to learn from the third person, through the interpreter. Interpreters are a little behind. The pro-

> fessor's maybe already done with that subject and starting a new subject and the interpreter's busy trying to catch up and I ask a question, oops, so, you see? I've had that happen before, I feel funny, I feel inferior.

Another constraint on participation is related to the interpreter's reverse interpreting of the student's question or response into spoken English:

> *Interviewer:* Is it difficult for you to ask questions in class?
>
> *Informant:* Yeah because I'm not very happy with the interpreter. For example, I raise my hand to ask a question and I'm talking to the interpreter, then the interpreter reverses to the teacher. Sometimes, the interpreter doesn't understand me and I spell it again, and I spell it again . . . . it's very embarrassing, the people all listening to this repetition. I get really frustrated.

Several informants noted that using an interpreter is tiring and requires total concentration. They felt that instructors were seldom aware of this and, as a result, sometimes misinterpreted the informant's behavior in class. One person said he felt an instructor was "picking on him" in class. When asked to explain this, he continued:

> I feel he picks on me because I gave him a wrong answer and so forth, but he doen't realize it's because I can't respond to the right answer quickly because of the interpreter. My attention span is only 15 minutes. After that, I'm really sleepy. He doesn't realize that. He thinks it's easy just to look at the interpreter, don't even have to take notes, but it's not. It's twice as hard. I think, nowadays, professors should be aware of how tiring watching an interpreter can be and they should understand more about that.

Lastly, while the technical support provided by interpreters helped students access formally presented information, these services were less successful in facilitating informal classroom interactions. Several informants noted the inability of an interpreter to bridge the hearing impaired student's separation from the informal information exchanges and interactions in the classroom. While these exchanges were often inconsequential, this inaccessibility compounded students' feelings of isolation or separation from the group. The following quotation provides several examples of this kind of separation and the relative ineffectiveness of the interpreter in these situations:

> *Interviewer:* You said that sometimes you will interrupt and ask people what they were saying (during lab).
>
> *Informant:* A little bit. I try not to do it too much. Like during an experiment, I wanna know what's going on. I'll see people talking and I might say, "Can you tell me what you just said?" Sometimes they give me just a short, limited synopsis and not the whole story. Sometimes they say it's not important. And often, I'll ask the interpreter to interpret for me what's going on.
>
> *Interviewer:* How do people react when you do that?
>
> *Informant:* Well, they don't like to repeat it. They show a willingness, but they're put out a little bit. . . . It depends on the situation. . . . In one hearing class, the hearing people will get all excited about some news that goes around and there'll be all this chatter from one person or another, and I'm depending on the interpreter. Sometimes the interpreter will allow me to join their conversation by interpreting it, but sometimes I feel left out during class.

Psychological Constraints

Informants described separation associated with perceptions of themselves and interpretations of how they and other hearing impaired individuals are viewed by others. For example, informants described not only difficulty participating in the exchange of information in the classroom, but a reluctance or hesitancy to do so. Participation was mediated by their perceptions of their competence and an assessment of how their performance would be viewed by others. Informants were frequently reluctant to participate if they felt there was a high likelihood they would make a fool of themselves. Their descriptions of conditions or concerns that could lead to such a judgment included the following: if a question was off the point, if a question or answer had already been asked or given, if a comment was difficult to interpret or understand and would thus require repetition, if their voice sounded funny or if they used the wrong pronunciation, and if their technical language and vocabulary were below a perceived normal hearing student level.

In most cases, informants' concern with how they presented themselves to others was associated with their perception that hearing people look down on hearing impaired people and consider them inferior. In this vein, one person described an awkward situation in class and his interpretation of it:

> I remember one time it was one exam, and was supposed to be really hard. I got an "A" on it. The teacher had a stack of papers and was calling out names. All the deaf people were sitting over there. When the teacher saw the grade, [he] assumed it was a hearing person. You could tell he assumed 'cause he was looking at the hearing people "John Smith!" [he called out], looking out, and I was way over here, waving my hand, and he didn't see me. He was looking at the hearing people. The interpreter had to say, "He's over here."

In addition, some informants were plagued by the belief that their behavior was being scrutinized by hearing students. For example:

> I can see it, like everybody is looking when I raise my hand. It's so seldom that deaf people raise their hand for a question. I'm scared to ask questions. The interpreter's willing to voice it. When I went to raise my hand, everybody is listening. I decided to talk and use my voice. I said, "I'll just use my voice" and the interpreter offered. And they look and . . . maybe I'm just being paranoid, but I can feel people looking at me.

Informant's perception that hearing students were watching, judging, and expecting an inferior, if not foolish, performance influenced their classroom activities in several ways. First, it constrained their participation, as described above. Some students described themselves as so unwilling to risk exposure and possible embarrassment that they would refuse to ask a question in class even when this would result in their leaving the class with an incomplete or incorrect understanding of information. Secondly, they were embarrassed when another hearing impaired student's behavior reinforced this real or perceived prejudice, as illustrated by the following:

> There are some cases in the classroom where a deaf student will raise their hand and ask a really stupid question—something the teacher just talked about for 30 minutes.

> They get very embarrassed, wondering if the hearing people would stereotype all of us just because that one deaf person asked a really stupid question. I get very embarrassed when they do that. I think oh, my goodness, I don't believe they're asking that question.

In such cases, informants are embarrassed not only for the other student, but for themselves. They seemed to feel that the behavior of one student reflected on them all. In short, these informants worried about how they would be judged individually for their own actions and how they would be judged by association for the actions of others.

Not surprisingly, a third result of informants' concern for how they appeared to others was expressed as a drive or motivation to prove themselves to hearing people. Interestingly, this motivation had two subtle components. Informants said they wanted to show what hearing impaired people could do, but they also wanted to distinguish themselves from the group, to show that they were not like most other hearing impaired students. The following quotations are illustrative:

> Some hearing students think that deaf students are behind, lower level. And I like showing that deaf students are very capable, kind of breaking the barrier, and I do that a lot. Like, if I do well, I ruin the class curve for the quarter. And I like to show that the deaf student can do above average and surprise them. So deaf students are very able to do it just as you, or better, and I think it happens sometimes that they've been embarrassed.

> In high school I also had to show hearing that I was not like all those other deaf.

In summary, while informants welcomed the opportunity to attend RIT classes and felt they were successful within them, they also described separation and at times even isolation from the mainstream teaching and learning process. Analysis of their comments reveals specific constraints on integration within the classroom, including the physical grouping of hearing impaired students, the use of support services, and perceptions of themselves and others.

Social Interactions and Relationships

Informants were asked to describe their social life at RIT, including participation in clubs, friendships with other students, and dating. In particular, they were asked to discuss their interactions and relationships with hearing students. Their comments include descriptions of the ways in which hearing impaired and hearing RIT students interact and the types of relationships they develop, as well as explanations for these relationship patterns.

Descriptions of Social Interactions and Relationships

Four broad categories emerged from analysis of informants' descriptions of social interactions and relationships with hearing RIT students. These are rejection (essentially negative interactions), separate worlds (neutral), acquaintanceship (casual but positive interactions), and friendship (close, positive relationships).

Several informants described instances of rejection in recounting interactions with hearing peers. Sometimes this rejection was generalized to all hearing impaired students, as reflected in the use by some hearing students of the derogatory slang term "NIDS" in reference to hearing impaired RIT students (the term is derived from the acronym NTID). In other instances, the rejection was more personalized. In the following example, an informant recalls his efforts to join a hearing fraternity, and his interpretation of why he was turned down:

> After I tried joining [hearing] fraternities, they rejected me because of my communication. I tried a second time and they rejected me again . . . because of my communication. A lot of hearing people don't like deaf people that much if they don't have good communication. They won't interact with them.

The category of "separate worlds" is perhaps the most reflective of informants' perceptions of their social interactions at RIT. This category includes descriptions offered by many informants of a fundamental gap or barrier between hearing impaired and hearing students leading to parallel social networks. The major difference between the categories of social rejection and separate worlds is the tone of neutrality and acceptance that pervades informants' descriptions of the latter. As one person put it, "See, I don't exactly reject them [hearing students] and I know they don't exactly reject me, but we just know that we're wasting our time." Another descrption of the separation of hearing impaired and hearing students into different social worlds is as follows:

> For the most part, I don't think the hearing people necessarily all reject us or accept us. It's more they're here, they're students—I'll leave them alone and they'll leave me alone. It's more of a neutral situation, just walking by each other. I don't think the hearing people have much of a desire to make friends with the deaf. They have their own peers. Same with the deaf people. We don't really [have] a desire to make hearing friends because they have their own peers. What I really see is two groups of people that mix but don't pay a lot of attention to the other group.

In spite of this social separation, informants did recall positive interactions with hearing students, best described as acquaintanceships. The term "acquaintanceship" is used here to convey the temporary or relatively casual nature that characterized most descriptions of positive relationships with hearing peers. Some examples:

> I would make hearing friends but it never lasted very long. Maybe we'd sit and eat lunch together. We'd talk. We'd get along and then one day it was gone. Very short stints and very short relationships.

> *Interviewer:* Do you feel that you have good close communication with your hearing friends?
>
> *Informant:* Not that close, but pretty good . . . [I tell my girlfriend] something funny that happens, or a joke. Tell her what happened with the project, what did you do last weekend, what did you do this weekend, do you want to go to a party . . . It's very surface, surface conversation. But it goes well.

While close friendships with hearing students were rare, they did occur. These friendships were usually qualified by the informant as special, that is, not typical of their general experience with hearing people. For example, one informant spoke of close ties to his hearing "brothers" in a campus fraternity. He recalled that they were willing to repeat their conversation for him, "they went out of their way a little bit—it made me feel good." Several others said they became friends with hearing students who expressed an interest in learning sign language or provided specific academic support services, such as notetaking or tutoring. One woman said she moved comfortably in circles of hearing impaired and hearing friends. Another offered his description of a "true" hearing friend:

> They were like the notetakers or they're the ones who had a really special personality that knew what deaf people are like. They understand and they see that as a problem. They understood that RIT people don't want to be bothered with deaf people. He understood that and he knew it was wrong. That's a true friend.

Most often, however, informants described friendships with hearing students in contrast to friendships with hearing impaired peers. Almost every distinction between friendships with hearing students and those with hearing impaired students involved differences in the depth, quality, or endurance of the relationship. Often, the discussion came down to a distinction between "good" friends and "best" friends. With very few exceptions, best friends were always hearing impaired. For example:

> They [hearing students] were good friends, but how do you define good friends, you know? I guess if I used the word "best friends," you know, my best friends would be hearing impaired people and my good friends would be hearing people. You know, there's a difference. I just don't . . . know why, subconscious maybe, I just don't let myself go beyond the point of becoming too chummy with hearing people. It's just that I guess we both draw the line to each other. It works both ways.

In summary, informants' comments suggest that close and sustained friendships with hearing students were rare. Rather, these relationships were more like acquaintanceships. Instead, they formed close ties with hearing impaired peers, which resulted in a separation of hearing and hearing impaired students in different social worlds.

Explaining the Relationship Patterns

Informants were asked to explain their choices of friends and their reasons for participating in essentially separate social networks. Their explanations include such variables as opportunity, ease and comfort of interaction, group identification, and social prejudice.

Informants said that one of the main reasons they associate with hearing impaired peers is that the RIT campus presents them with the opportunity to do so. Usually, this explanation is closely tied to the individual history of the informant. For example, some informants who had attended residential schools for the hearing impaired said they interact with hearing impaired students because they are accustomed to doing so. Interestingly, students from mainstream high schools placed even greater emphasis on the importance of opportunity and choice in explaining their decision to associate largely with hearing impaired peers. One person said she enjoyed meeting other hearing impaired students from mainstream schools because she discovered she wasn't the only one who had been lonely in high school. As she put it, this shared experience was "a trademark between all of us."

Other informants who had attended mainstream high schools found in RIT a kind of "oasis," a respite from the more limited social involvement they had experienced in high school and which they expect to face after leaving college. The following quotations are illustrative:

> My fraternity is a hearing impaired fraternity. I'm sure you're gonna ask why it's a hearing impaired fraternity and rather not a hearing one. I grew up in hearing society and now I wanna grab all the time being with the hearing impaired people. It's kind of once-in-a-lifetime opportunity. I just wanna grab it before I go back to the real world where I belong, the working world, the daily home life.
>
> A lot of it has to do with my past. I failed so often in trying to make hearing friends. I've noticed I'm not really trying as hard as I used to because I have deaf friends and I'm more satisfied. I have friends—I don't have to try any more. In [the mainstream] high school, I was desperate—I had nobody and I'd try everything I could. But here at NTID, I have all these deaf friends. I have more of an attitude of, well, here's a hearing person. I'd like to meet him, but I'm afraid to hurt myself. Maybe they'll reject me again. I've been rejected so many times, I'm not sure I wanna do it again.

Students said that ease and comfort of interaction was another reason why they chose interaction with hearing impaired over hearing peers. Sometimes differences of linguistic mode present obvious communication barriers to hearing impaired and hearing students. In other cases, the barrier is more subtle. For example, several informants note that communication with hearing students is more time-consuming than communication with hearing impaired peers. One informant suggested that fear of failure or social discomfort prevents interactions between hearing impaired and hearing students:

> I see a lot of separation between deaf and hearing. I know they want to communicate and meet but they're afraid. . . . I think they're afraid to communicate and get nervous and afraid they'll say the wrong thing. They'll misunderstand or hurt each other when they don't mean to, so they just leave it alone. There could be diamonds in there [the relationship; they should] find out what it's like.

Group identification is a third explanation offered by informants for their relationships with hearing impaired peers. The concept of group identification includes a sense of community and shared perspective, often correlated with similarities in background and life experience. As one person put it, "I'm hearing impaired, my friends are hearing impaired, we're all going through the same thing, we understand our limitations and our problems, while these hearing students have different problems and different limitations. . . ."

Lastly, informants said that social prejudice contributed to their alienation from hearing students. For example, several described instances in which rejection by hearing peers was based on stereotypes of hearing impaired people. In the following quotation, an informant describes his rejection by hearing students who assume that all hearing impaired people are the same. Ironically, he has made the same generalization, as illustrated by his description of "special deaf people":

> I have a hard time making hearing friends. It's because of the history. There's a lot of, I hate the word "dumb," but different deaf people, maybe sort of typical deaf people, special deaf people. When they see the deaf people coming from the deaf schools and their behavior—because they had no role models or the way they make their voice sounds—the hearing people look at them and think that I'm like them, like I'm in the same category as them, [that] I'm one of the NIDS, stupid.

This young man's comment is especially significant because it reflects a pattern of stratification and social subgrouping within the hearing impaired student population that emerged across the interviews. Informants routinely made distinctions between oral communication versus signing, deafness versus hearing impairment, and mainstream versus residential school backgrounds in their discussions of social relationships at RIT. For example, communication and interaction among hearing impaired students was not always easy or smooth, and sometimes hearing impaired students avoided or rejected each other on the basis of these differences. Conversely, informants tended to select as friends those hearing impaired students with similar educational backgrounds and communication styles. The following quotation is illustrative.

> A lot of people who are deaf people didn't accept me at all. I felt even more lonely. Realizing that even . . . the deaf world is not right for me. . . . But then, after I started to meet some other hard-of-hearing people like me, it got a little better for me.

Clearly, hearing impaired students are not a homogeneous group, nor does having a hearing impairment insure acceptance by or friendship with hearing impaired peers. Informants' comments suggest that the range of interactions and relationships between hearing impaired and hearing students (that is, rejection, separate worlds, acquaintanceship, and friendship) can also be used to describe interactions among hearing impaired students. Similarly, the variables discussed by informants in explaining their tendency to associate more with hearing impaired than hearing peers can also be used to explain their relationship patterns within the hearing impaired student population. While it is beyond the scope of this study to explore stratification and subgroupings within the hearing impaired student population in detail, it is important to note that such variety exists.

DISCUSSION

RIT is in some ways a unique educational environment for hearing impaired students. However, it is possible to find in the RIT environment many elements that also appear within other postsecondary educational settings serving hearing impaired students. While we would not propose to generalize from the experiences of our informants to all hearing impaired students in mainstream postsecondary settings, we would suggest that some of their experiences may not be unique to these students or RIT. In this spirit, we offer the following observations and comments on the findings of this study.

First, classroom learning involves more than access to formal instruction. To be integrated into the classroom teaching/learning process, the student must also be able to actively participate in the exchange of ideas and information that occurs through classroom discussion and the informal communication networks that develop among students and between the students and instructor. The hearing impaired students we interviewed were able to access classroom instruction by using the support services of interpreters, notetakers, and tutors. However, while these supports are essential to their presence and success within the mainstream class, they could not replace the direct communication enjoyed by the hearing students in these classes or by hearing impaired students in classes with instructors who sign for themselves. In fact, informants described instances in which the use and reliance on support services served to distance them from the instructors, other students, and the exchange of information. Informants also described constraints on participation in class associated with perceptions of their competence and assessment of how their performance would be viewed by others.

These findings have implications for the student's ability to assess the total milieu of the classroom. For example, this distancing may be critical when the teaching behaviors of the classroom instructor are particularly effective. Perry and Dickens (1984) found that a highly expressive teacher can generate significant achievement gains over a less expressive teacher.

Observable behaviors such as movement, voice intonation, eye contact, and humor may cue selective attention. Unless the interpreter can capture and convey these same cues, hearing impaired students may be at an instructional disadvantage compared to their hearing peers.

The distancing described by informants may also pose a threat to the student's engagement in the learning process. Corno and Mandinach (1983) discussed four forms of cognitive engagement in the classroom: self-regulated learning, task focus, resource management, and recipience. While students appear to use alternate forms of engagement, successful students tend to rely more heavily on the first two types. In contrast, the comments of our informants suggest that their learning environment biases them toward the other two forms of engagement: resource management, which involves reliance on others for help, and recipience, which is a more passive response to the learning environment. Being engaged in self-regulated learning implies that students are actively involved processing and transforming the information to be acquired and have some sense of control over their own learning. Our students' comments indicated that their involvement in the classroom is somewhat indirect and that some learning decisions are out of their control. For example, students were denied certain choices, such as attending class or paying attention if they were the only hearing impaired person requiring the services of an interpreter, being selective in taking notes, and seeking out particular individuals for discussion and collaboration. In addition to losing some freedom of choice, students are constrained from assuming full responsibility for their own learning.

Further, the students we interviewed were socially segregated within the class. They tended to sit alone or with other hearing impaired students and rarely engaged hearing students in casual conversation or sought them out for activities involving groups or partners. They seldom participated in class discussions and frequently felt that the hearing students were looking down on them. In fact, it might be said that they formed a parallel social network within the mainstream class similar in purpose and structure to the separate social worlds developed by students through interactions with peers outside the classroom. Within this parallel classroom group, hearing impaired students offered each other the academic and social support, camraderie, competition, and sense of belonging that they were unable to attain through interactions with hearing classmates. This group identification may enable the students to cope with their perceptions that hearing peers have noncontingent negative opinions of their academic skills and performance. For example, application of Connell's (in press) work on self-system processes to the findings of this study suggests that if hearing impaired students have feelings of low relatedness with the hearing students, the negative views of the latter will have less of an impact than if they had feelings of high relatedness. In a similar vein, a recent study by Epstein and Feist (1988) indicates that identification with others mediates the relation between self-ratings and ratings of others. They suggest that the individual's self-esteem will not be damaged by the derogatory views of others if others are evaluated negatively by the individual.

While we have made no attempt to correlate these feelings of separation with the academic and personal/social achievement of our informants, we would suggest that those studies that have as their goal the assessment of hearing impaired students' achievement in mainstream classes take these factors into account, especially considering the fact that students' interpretations of themselves and others figure strongly in most current theories of motivation. There is also evidence that some classroom organization and management techniques minimize the effects of isolation for students. For example, based on their comprehensive review of the literature, Johnson and Johnson (1986) concluded that cooperative (as opposed to individualistic or competitive) learning experiences promote higher levels of intergroup acceptance. Other strategies that can be used by students or instructors to facilitate classroom interaction and participation include the recruitment of natural communities of reinforcement for appropriate social behavior (Gresham, 1986) and the creative use of seating arrangements to facilitate communication (Saur et al., 1986).

Second, our findings strongly support the position of Gresham (1986), Antia (1982), and others that physical presence and proximity do not insure interaction between hearing impaired and normally hearing students, either within or outside the classroom setting. Most of the students interviewed for this study spent many hours on campus and in classes with hearing peers, without significant interaction or the development of close friendships. While they appreciated the opportunity to attend a "hearing" college, they did not generally feel that their attendance at a mainstream school had resulted in meaningful relationships with hearing students. Most informants' descriptions of interactions with hearing peers fall into the categories of separate worlds and acquaintanceship. Their comments suggest that, for them, close and sustained friendships with hearing students are rare. Instead, they tend to rely more on social networks of hearing impaired peers and participation in hearing impaired clubs and social activities for deeper friendships.

Informants' explanations for their friendship patterns include increased opportunity to meet hearing impaired peers, ease and comfort of interaction with hearing impaired students, the importance of group identification, and the negative influence of social prejudice. In combination, these factors or conditions create a climate in which informants perceive both themselves and hearing students as lacking the motivation to pursue relationships with each other. Motivation includes interest, patience, and willingness of both parties to make the relationship work. As noted earlier, some informants had experienced rejection in past interactions with hearing peers, and as a result were reluctant to persist in their efforts to become friends with hearing students at college, especially in light of the many opportunities for interaction with hearing impaired peers at RIT. Others focused their explanations on the greater level of comfort and potential for individual growth that they found in relationships with hearing impaired students. While we did learn about some hearing students who were willing to take the time and invest the energy in a relationship with a hearing impaired peer, the perception of many of our informants was that this was the exception rather than the rule. Within this climate, informants described social interactions with hearing impaired peers as frequently more rewarding and easier to initiate and sustain than those with hearing students.

Ironically, the same conditions that facilitate placing hearing impaired students on campus and in classes with hearing peers also make possible the development of separate social networks. For example, the interpreter services that provide hearing impaired students access to formal instruction also raise barriers to such interaction by encouraging the grouping of hearing impaired students to use a single interpreter. Similarly, the large population of hearing impaired students on the RIT campus, intended to facilitate the development of comprehensive support services and give hearing impaired students opportunities to meet each other, also provides hearing impaired students with peers in sufficient numbers that they can have a full social life separate from hearing students.

It is important to note that the development of separate social networks within or outside the classroom should not necessarily be viewed as bad. The students we interviewed were for the most part quite satisfied with the educational and social opportunities available to them at RIT. The fact that their descriptions of interactions with hearing peers were more often reflective of separate worlds and acquaintanceships than of rejection suggests that these students did not see themselves as victims of chronic discrimination or hostility by hearing students or instructors. If anything, their comments reflect an attitude of "live and let live." Moreover, it is not clear that these students would have been more fully integrated if they had attended colleges where they were the only or one of a handful of hearing impaired students

Rather, it is possible that they would have experienced the same separation from hearing peers in these settings as they did at RIT, but without the alternative of association with hearing impaired peers. Given the importance of social integration to persistence within the environment, postsecondary programs serving small numbers of hearing impaired students may wish to consider alternative strategies for providing opportunities for these students to interact with hearing impaired peers; for example, through collaborative programs with other postsecondary institutions serving hearing impaired students or affiliations with local clubs and organizations for the hearing impaired.

On the other hand, the separation of students into hearing impaired and hearing groups raises other issues that should concern all educators. For example, segregation promotes an attitude of "us–them" and makes possible group stereotyping such as that reflected in the slang term "NIDS." Also, some students recalled experiences prior to arrival at RIT involving rejection by hearing people. Their attraction to hearing impaired peers must therefore be viewed within the context of individual life histories. Do they feel this way because they are tired of fighting the indifference and social rejection of hearing people, or is it because they found a fundamentally more satisfying alternative within the hearing impaired student population? Research on the formation and character of the "deaf community" suggests that the answer to this question is "probably both" (Foster, in press; Higgins, 1980).

Recommendations for Further Research

RIT cannot be described as a fully integrated campus. Rather, it is a setting in which hearing impaired students are offered a range of alternatives for academic and social growth. It also provides a fertile environment for the study of interactions between hearing impaired and hearing students. Bogdan and Taylor (in press) noted that most of the research on interactions between people with disabilities and nondisabled people has focused on the process by which disabled people are labeled and treated as "deviant." They call for more work in an area that they describe as the "sociology of acceptance," in which the focus is on positive, close relationships between people with disabilities and nondisabled people. We agree, and recommend that further research be done to learn more about how positive interaction between hearing impaired and hearing hearing students can be facilitated, both within and outside the classroom. Of particular interest is the study of friendships between hearing impaired and hearing students. Although they seem to be rare, such relationships do occur, and it would be interesting to learn more about them, including how they are initiated and sustained.

An unfortunate finding of this study was the degree to which hearing impaired students are concerned with the perceptions of hearing people. Worries about what hearing students will think pervades their descriptions of academic and social experiences and motivates them to disconfirm or distance themselves from the generalizations and stereotypes they believe hearing peers hold toward them and other hearing impaired people. It would be interesting to learn the perspectives of hearing college students toward their hearing impaired peers. Do hearing students look down on hearing impaired classmates? What stereotypes, if any, do they hold of hearing impaired people? How do these perceptions affect their interactions with hearing impaired students, within and outside of class? The answers to these questions are important to an understanding of mainstreaming in postsecondary settings, and research designed to address them is also recommended.

Finally, as noted earlier in the discussion, RIT is in some ways a unique educational environment. Most postsecondary programs do not have as many hearing impaired students as does RIT. Some have as few as one hearing impaired student, while others may have between 40 and 50. Only a few programs have the 100 to 500 hearing impaired students that Jones (1984) suggested is the critical mass required to provide optimal opportunities for the development of within-group friendships, social networks, and extracurricular activities. Research is recommended that focuses on postsecondary programs serving small numbers of hearing impaired students, with the goal of describing the experiences of these students and identifying strategies to increase their integration and participation within the mainstream of college life.

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A Survey of Faculty Attitudes and Accommodations for Students with Disabilities

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ABSTRACT

This survey of 124 faculty in education and health revealed that a large majority supported the integration of students with sensory and physical disabilities in higher education. They were less supportive of the mainstreaming of students with learning disabilities and emotional disabilities. Most were familiar with special education laws. Eighty-seven percent infuse content about disabilities into courses. Seventy percent make accommodations for students with disabilities. Implications for practitioners and researchers are discussed.

Since the enactment of Section 504 of the Rehabilitation Act of 1973 (PL 93-112) and the Education of All Handicapped Children Act of 1975 (PL 94-142), increasing numbers of children and youth with disabilities have been receiving education in public schools with their nonhandicapped peers (Reynolds & Birch, 1988; U.S. Department of Education, 1988). Similarly, these federal laws and advances in medical technology, rehabilitation engineering, elimination of architectural barriers and greater public acceptance (Kelly, 1984) have contributed to increases in the number of college students with disabilities (Aksamit, Morris, & Leuenberger, 1987; Jarrow, 1987; Mangrum & Strichart, 1984; Moore, Newlon, & Nye, 1986).

The success of this mainstreaming movement depends to a large extent on the adequate preparation of education professionals (Grosenick & Reynolds, 1978; Reynolds & Birch, 1988), as well as on their attitudes toward students with disabilities toward mainstreaming (Baker & Gottlieb, 1980; Bishop, 1986; Hannah & Pliner, 1983; Jamieson, 1984; Jones & Guskin, 1984). Likewise, in postsecondary settings, the degree to which students with disabilities will receive full benefits from their college attendance depends on the attitudes and behaviors of faculty and student service staff (Aksamit et al., 1987; Fonosch & Schwab, 1981; Nathanson, 1983).

To prepare school professionals to effectively serve a diverse population of students, colleges and universities undertook extensive efforts to redesign their training programs. These efforts focused mainly on curricular revisions to include competencies needed to serve individuals with disabilities and on inservice training for faculty and staff. An important impetus for these initiatives was provided through Dean's grants awarded to about 300 institutions during the 1970s and early 1980s (Grosenick & Reynolds, 1978; Sharp, 1982).

Evaluations of these efforts conducted by persons associated with Dean's grants (Bates, 1982; Reynolds, 1982), have shown that projects were successful in achieving the main goals of curricular revisions, faculty development activities, and for some, broader programmatic changes. Other studies have revealed that while there has been progress, it has been at a slower rate than expected. For example, Byford (1979) found that the 124 teacher-training institutions provided more skill courses in areas of diagnostic, remediation, and behavior management skills to regular teachers than were offered prior to 1970. Yet he concluded that widespread attempts are not being made to train teachers in special education skills. Gallery and McLaughlin (1980), in a survey of 170 colleges of education, found that 77% disseminate information on laws related to special needs populations. The most prevalent vehicle for presenting this information was course work. Sixty-two percent perceived a need for training faculty members, yet updating did not seem to be widely implemented. Sattler and Graham (1983), in a survey of 200 postsecondary institutions, found that half require at least one course in special education in the elementary education program; 38% require at least one special education course in secondary programs. The majority, however, integrate special education content into existing professional education courses. Only 68% provide inservice training for faculty.

Studies and reviews on the integration of students with disabilities into college settings suggest that a growing number now provide accommodations and support services to students (Aksamit et al., 1987; Jarrow, 1987; Kolstoe, 1978; Marion & Iovacchini, 1983). Examples of such efforts include increases in campus accessibility, provision of housing options and transportation services, appointment of 504 compliance officers, provision of counseling services, and provision of services for students with hearing impairments, visual impairments, and learning disabilities.

Results from studies of faculty and staff attitudes do not seem to provide a consistent picture. Some investigators reported positive attitudes by faculty toward college students with disabilities (Aksamit et al., 1987; Fonosch & Schwab, 1981; Kelly, 1984). Nathanson (1983) reported feelings ranging from acceptance and respect to fear and pity. Newman (1976) found faculty to be in favor of admitting students with disabilities into their academic programs, though about half believed that there would be problems in their admission. The two disabling conditions that faculty felt would be most restrictive for college work were blindness and deafness. Moore et al., (1986) found that an overall concern of students with disabilities was a lack of awareness by many faculty and a feeling that professors often fail to meet their needs. Limited knowledge by faculty and staff about learning disabilities was also reported by Aksamit et al., (1987). It should be noted that attitudes toward disabled students tend to be related to several variables. These include (a) gender; that is, female faculty have more positive attitudes than men (Aksamit et al., 1987; Fonosch & Schwab, 1981; Jarrow, 1987; Kelly, 1984); (b) level of information; that is, faculty with more information about disabilities hold more positive attitudes than those with less information (Aksamit et al., 1987); (c) discipline; that is, faculty in education and social sciences are more positive in their attitudes than faculty in other disciplines (Fonosch & Schwab, 1981); and (d) experience; that is, faculty with previous experience and contact with individuals who are disabled hold more positive attitudes than those with limited experiences (Fonosch & Schwab, 1981; Morris, Leuenberger, & Aksamit, 1987; Nathanson, 1983).

The purposes of the present study were to ascertain whether faculty participated in staff development activities related to mainstreaming, whether they were familiar with laws pertaining to the rights of persons with disabilities, and the degree to which they infuse information about disabilities into their courses; and to examine attitudes held by faculty toward the integration of students with disabilities in higher education and assess whether accommodations are being made to facilitate their mainstreaming.

METHOD

Participants

The sample of this survey consisted of 220 full-time faculty members teaching in a large state university of about 25,000 students. Included were faculty in the College of Education involved in the preparation of educators and faculty in the College of Professional Studies preparing students in the areas of communication (i.e., speech pathologists, counselors for the hearing impaired) and health (i.e., physical therapists, nurses, community health professionals). Questionnaires about mainstreaming were sent through campus mail to these faculty.

Also included was a cover letter explaining the purpose of the study. Faculty were asked to return the completed instrument to the author by campus mail. After sending out a follow-up reminder, 124 (56%) surveys were returned and later used in the statistical analysis. Responses were available from many senior and from junior-level faculty (not teaching assistants). Those who did not respond were faculty holding similar ranks within their departments. Most faculty in special education did not respond. Of the 124 respondents, 44.3% were males and 55.7% were females. Years of teaching experience ranged from less than one year to more than 25. About two thirds of faculty (68%) were affiliated with the College of Education; all others (32%) were affiliated with the College of Professional Studies. Note that in the past, staff development and curricular development activities related to mainstreaming were introduced in the two colleges with the support of federal grants awarded to the institution.

Survey Instrument

A 30-item "Faculty Input Questionnaire" was developed following a review of the literature on mainstreaming in higher education. Several items were adapted from instruments used in surveys conducted by Dean's grant projects (Grosenick & Reynolds, 1978; Sharp, 1982). Included were questions examining background information, followed by items exploring familiarity with legislation, attitudes, integration practices, experiences with individuals who are disabled, availability and use of support services and resources, and participation in staff development activities related to special populations. The instrument included Likert-type items, questions requesting multiple responses, and dichotomous (yes/no) items. There were also a number of open-ended questions. Space was provided to elicit faculty comments.

RESULTS

Faculty Knowledge of Mainstreaming and the Infusion of Information about Disabilities into Courses

Results are summarized in Table 1. As can be seen, almost all respondents (97%) indicated that they are familiar with the concept of mainstreaming; and 87% responded that they are familiar with federal legislation (e.g., PL 94-142; section 504 of the Vocational Rehabilitational Act) and with the state law (H.B. 150) pertaining to the rights of students with disabilities. About half reported that they had an opportunity to participate in training aimed at the development of knowledge about the law and about persons with special needs. When asked to identify examples of training activities, most mentioned workshops and conferences on and off campus, the Special Arts Festival, and experiences while supervising students in clinical experiences. On the questions of if they infuse special education content or information into their courses, 87% responded affirmatively. A total of 20% indicated that they provide indepth discussions and request extensive student assignments, 40% present the topic on mainstreaming during several class meetings, and 27% mention the topic once or twice in class.

More than 90% of faculty responded that they had contacts with people who are handicapped. The figure included 37.2% with extensive experiences and 51.3% with limited experiences. Disabled individuals with whom contacts have been made were friends (35.7%), coworkers (22.3%), family members (21.1%), relatives (15.8%), and others (53%). The "others" category included students.

On the question of experience in teaching students with disabilities during their career in higher education, almost 90% responded positively. Sixty-seven percent had experience with students who are sensory disabled; 60%, with students who are physically disabled. The figure was only about one third for students with learning disabilities and those with social/personal adjustment problems.

A stepwise regression was conducted using the infusion factor as the dependent variable in order to examine which major variables predict the tendency of

Table 1

Responses to Items Exploring Familiarity with Mainstreaming, Staff Development, Infusion, and Experience

Item		No	Somewhat	Very
Familiarity with concept of mainstreaming		2.6%	43.9%	53.5%
Familiarity with federal and state laws		13.2	46.5	40.4
		No		**Yes**
Participation in faculty development activities		50.4%		49.6%
	Not at All	**Mentioned Once or Twice**	**Presented in Several Class Meetings**	**In-Depth Presentation**
Infusion of special education content	13.4%	26.8%	40.2%	19.6%
		No Experience	**Limited Experience**	**Extensive Experience**
Personal experience with the disabled		9.7%	53.1%	37.2%
		No		**Yes**
Who were these individuals?				
Friend		64.3%		35.7%
Co-worker		77.7		22.3
Immediate family member		78.6		21.4
Relative		83.9		16.1
Other		46.4		53.6
		No		**Yes**
Experience with disabled students in postsecondary education		13.2%		86.8%
Group with whom you had experience				
Sensory impaired		31.3		68.8
Physically impaired		39.3		60.7
Learning disabled		65.2		34.8
Social/personal maladjusted		67.0		33.0

faculty to incorporate special education information into their courses. A summary of the regression procedure is presented in Table 2. Four significant predictors of the infusion variable emerged. These included familiarity with the mainstreaming principle, personal experience with individuals who are disabled, use of university resources and services, and participation in staff development activities. The overall $F(4,94) = 18.42$ ($p < .000$) with a multiple R of .662 and R^2 of .439 indicates that 44% of the variation in infusion was accounted for by these four variables.

Table 2

Summary of Stepwise Regression Procedure on Infusion

Step Number	Variable Entered	Multiple R	R^2	Increase R^2	Simple r
1	Familiar with mainstreaming principle	.493	.243	.243	.493
2	Personal experience with disabled	.574	.330	.086	.431
3	Used university resources	.630	.400	.070	.288
4	Participated in staff development activities	.662	.439	.038	.410

Faculty Attitudes and Integration Efforts

Table 3 shows that close to 90% of respondents expressed a positive attitude toward the integration of students with visual and hearing impairments and students with physical or health impairments. However, only about half were supportive of accepting students with learning disabilities and students with social/personal adjustment problems. These responses correspond with answers given to another item requesting a judgment of whether students with various disabilities are capable of getting through college. Consistent with the earlier response almost all respondents indicated that they believe students with mild to severe sensory disabilities and physical and health disabilities are capable of succeeding in colleges or universities. About 70% of the faculty felt that only those with a mild disability (learning disabilities or social/personal adjustment difficulties) are capable of making it through higher education. One fourth still felt that students with severe disabilities in these two groups could get through college.

Almost all faculty respondents felt that it is appropriate to spend tax dollars so that campus programs and activities can be made accessible to students with special needs, including all necessary adaptations and needed special education and support services.

Have faculty made any adaptations or accommodations in their college classes to meet the needs of students who are disabled? Most (about 70%) said they had. When asked to provide examples of such adaptations or techniques, faculty mentioned using taped textbooks and signers, modifying test conditions, using transparencies and the chalk board, and using peer helpers and notetakers. Some indicated that they provide more individual attention. About 80% of the respondents indicated that students with disabilities in their courses talked with them and explained their special problems and classroom needs. Interestingly, the Pearson correlation between these two variables (i.e., adaptations made by a faculty member and student contacting that faculty) was high and significant ($r = .590$, $p < .000$). About one third of faculty responded that they needed university support or help for making the necessary adaptations (for example, using specialized equipment or changing the location of the classrooms). Asked about their familiarity with

Table 3

Responses to Items Exploring Attitudes, Adaptations, and Use of Resources

Question	No	Don't Know	Yes
Support admission of			
Sensory impaired	3.5%	7.9%	88.6%
Physically impaired	2.7	10.6	86.7
Learning disabled	10.7	32.1	57.1
Social/personal maladjusted	13.4	46.4	40.2
	No	**Only those with mild disabilities**	**Even severely disabled**
Capable of succeeding			
Sensory impaired	0.9%	11.0%	88.1%
Physically impaired	0.9	12.9	86.2
Learning disabled	3.8	68.9	27.4
Social/personal maladjusted	2.9	71.4	25.7
	No	**Moderate expenditures**	**Whatever is needed**
Support for spending tax dollars for disabled in higher education	2.9%	59.2%	37.9%
	No		**Yes**
Made adaptations in courses	24.0%		76.0%
	No	**Can't remember**	**Yes**
Students explained needs	19.0%	4.0%	77.0%
Needed university resources	60.6	5.1	34.3
	No		**Yes**
Familiarity with resources and services to aid the disabled	21.2%		78.8%
Used university services and resources	56.6		43.4

resources and services available on campus, more than 80% answered affirmatively. Examples of services mentioned were library materials and equipment for the blind, the Handicapped Student Services Office, the Speech and Hearing Clinic, the Services for Hearing Impaired Office, and the Counseling Office. Less than one half of the respondents answered that they had used these services. The correlation between knowledge of resources and their use was significant ($r = .456, p < .001$).

One way ANOVAs were carried out on the two main variables of Infusion (the tendency to include special education content in courses) and Course Adaptation (accommodations made in courses for college students with disabilities) to determine whether there were differences in average scores on each based on gender, years of teaching experience, and college. Findings revealed no significant differences between males and females, faculty with less or more than 5 years of experience, and college (Education vs. Professional Studies) on the Infusion variable or on the Course Adaptation variable.

On the open-ended question requesting faculty to provide suggestions for how the university could improve the preparation of teachers and related service professionals to better serve individuals with disabilities, most stressed the need for a greater dissemination of information to faculty, particularly about learning disabilities. Also mentioned were inservice activities and workshops, the listings of available services and resources, more disabled guest speakers in classes, and more extensive clinical experiences with disabled students.

DISCUSSION

The main goals of this investigation were to obtain data about faculty familiarity with laws pertaining to the rights of individuals with disabilities; their level of commitment to the implementation of the mainstreaming principle, and their attitudes toward the integration of students with handicaps in higher education.

Findings revealed that almost all faculty responding to the survey were familiar with the concept of mainstreaming and with federal and state laws ensuring equal educational opportunities for students with disabilities. These findings may not come as a surprise considering the fact that staff development activities (e.g., workshops, guest speakers, panel presentations) related to mainstreaming had been available to faculty and staff over the years. About half indicated that they participated in these training activities. Almost all faculty reported previous interactions with and exposure to persons with disabilities, including relatives, friends, and coworkers. Most also pointed out that they had teaching experiences with students who are disabled.

A substantial number of faculty (87%) indicated that they assimilate content about disabilities and mainstreaming into their courses. About 20% introduced major revision in their courses by having indepth discussions of mainstreaming and requesting extensive student work, while 40% reported spending several class sessions in presentations and discussions about special needs populations. While there are no data available to indicate specifically what content or information is covered in these courses, the fact that most faculty infuse information about disabilities into their courses is heartening. The finding is supported by a number of surveys (e.g., Sattler & Graham, 1983) showing that infusion of special education content into the existing sequence of courses is the alternative most commonly used by institutions of higher education.

The stepwise regression analysis on the infusion question revealed that four variables affected the tendency of faculty members to introduce special education information in the curriculum. These included familiarity with the mainstreaming concept, personal experience with disabled persons, use of university resources, and participation in faculty training activities. The implication of the need for a continued effort to identify and provide innovative alternatives for faculty participation in activities and programs that offer information about disabilities and mainstreaming is quite obvious.

Data revealed that faculty in this sample involved in the preparation of educators and health professionals support the integration of students with sensory and physical disabilities in postsecondary education. Most reported having teaching experience with students in these two groups and expressed the view that they have the potential to successfully complete their program of studies. However, findings also indicated that faculty were less supportive of the integration of students with learning disabilities and social and emotional problems in higher education. They expressed uncertainty about whether these students are capable of pursuing a course of study in a college or university. Only a third reported having teaching experience with students in these two groups. Overall, findings on faculty attitudes parallel results from other investigations, suggesting a hierarchy of preference of persons with special needs by teachers and professionals in related fields. These studies have shown a higher level of acceptance of persons with sensory and physical impairments than of persons with mental retardation and emotional/social disabilities (Hannah & Pliner, 1983; Horne & Ricciardo, 1988; Leyser & Abrams, 1982; Leyser & Bursuck, 1986; Williams & Algozzine, 1979).

Regarding attitudes toward students with learning disabilities, studies show that classroom teachers (Moore & Fine, 1978), as well as student service staff and faculty (Aksamit et al., 1987), support their integration. Yet in a recent study, Morris et al. (1987), reporting on attitudes toward learning disabled college students of faculty who did not participate in inservice training become more negative over time. The limited support for the integration of students with learning disabilities reported here is of concern in light of the increased number of these students attending postsecondary institutions (Aksamit et al., 1987; Jarrow, 1987; Morris et al., 1987). Several steps may be taken to facilitate the effective mainstreaming of these students. First, more extensive counseling and advisement opportunities should be offered. It might also be helpful to design programs that will offer remediation in basic skills as well as training in learning strategies. Careful attention needs to be given to the idea of providing waivers or substitutions for courses such as math and foreign languages. Modifying admission requirements in teacher education, for example, needs to be considered by looking beyond standardized test scores and grade point averages.

An important finding in this study was that most faculty reported making adaptations in their courses for students with disabilities. Almost all of these adaptations were basic commonsense modifications that are easy to implement and facilitate the integration of students with sensory and orthopedic impairments. Few adaptations were specifically mentioned to assist students with learning disabilities, yet obviously some of the examples given are helpful for these students (i.e. modified testing conditions, notetakers, and taped texts). Many faculty pointed out that students with handicaps have contacted them to explain their needs for accommodations. While there was no evidence to indicate that these contacts resulted in faculty being willing to make course adaptations, the positive high correlation between the two variables of student contact and course adaptations suggests that such encounters are beneficial.

It is recommended that time be set aside during orientation meetings or advising and counseling sessions to remind and encourage students to take the initiative and talk to instructors about their interests, concerns, and needs for adaptations (see also Moore et al., 1987; Nathanson, 1983).

Faculty responses indicated that less than half are using the resources and support services available on campus to assist students with disabilities. For instructors who do not use these services, it can be argued that at least some are unaware of their availability (this was suggested by faculty recommendations). It is likely that students in their courses are making some arrangements and accommodations on their own without involving the professor.

No statistically significant differences were found on the infusion and course adaptation practices on the variables of gender, teaching experience, and major college. These findings are supported by several recent studies showing that teaching experience (e.g., Leyser, Volkan, & Ilan, 1989) and gender (e.g., Berryman, 1989; Hays & Gunn, 1988) were not associated with tolerance toward mainstreaming. Other investigators, however, have reported that teaching experience was negatively related to attitudes toward integration (e.g., Center & Ward, 1987) and that women hold more positive attitudes toward persons with disabilities or mainstreaming than men (Aksamit et al., 1987; Harvey, 1985; Jarrow, 1987; Kelly, 1984). Fonosch and Schwab (1981) reported no differences in attitudes by education and social sciences faculty. Both groups expressed more positive attitudes than did faculty from other disciplines. Further studies are needed to clarify the relationships between these (as well as other) demographic variables and tolerance toward mainstreaming.

Faculty indicated that they would like more information about disabilities, especially about students who are learning disabled. As mentioned, many also asked for more information about available services and resources both on campus and in the community. It seems that special education faculty and staff working in disabled student service programs on campus may have to take the lead in coordinating these activities, planning workshops, preparing listings of resources, guiding faculty in the use of these resources, and arranging for guest speakers.

Several shortcomings of this survey need to be acknowledged. First, because of the small sample size and the limited response rate, as well as the fact that the sample included only faculty from education and health in one institution, interpretation and especially generalization of the results should be done with caution. Second, the data presented were obtained with the help of a short questionnaire. The use of other data collection instruments such as interviews with faculty and students and observations could have generated additional valuable information. Despite these limitations, the survey provided several practical implications for postsecondary institutions of similar size and organizational structure, and also introduced useful data against which findings from future investigations might be compared.

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Assessing Library Accessibility: Suggested Guidelines

John W. King, *Coordinator of Services for Disabled Patrons, University of Maryland Libraries, Hornbake Library, College Park.*

The Rehabilitation Act of 1973, in particular Section 504, mandates physical and programmatic access to all services and facilities receiving federal funding (President's Committee on Employment of the Handicapped, 1979), which includes most academic libraries. It is relatively easy to determine the degree of external physical accessibility because there are many sets of guidelines for general requirements for doors, ramps, elevators, curb cuts, and parking (Architectural and Transportation Barriers Compliance Board, 1985; Cotler & DeGraf, 1976, Needham and Jahoda, 1983).

However, simply getting into a building may not be enough. Finding a parking place and getting in the front door—admittedly sometimes major accomplishments—are not enough. Internal physical mobility and access to library services must also be considered, particularly in academic libraries. The disabled library patron needs access to materials and services throughout the library. Unfortunately, the degree to which access to services is available varies considerably from library to library, even within the same campus library system.

Karrenbrock and Lucas (1986) reported that most studies of library services to physically disabled patrons in academic libraries have concentrated on the architectural accessibility of the library facilities. A 1982 survey of services to disabled patrons by Association of Research Libraries (1983) members showed that the initial emphasis was on the alteration of physical facilities and the acquisition of special materials and equipment. Thomas (1980) and Thomas and Thomas (1983) reported that, while most library buildings were accessible from the outside, internal accessibility was still limited.

To be sure that a given library is truly accessible, attention must be given to more than external physical accessibility. It is important to review public service policies on reference services, circulation of library materials, access to reserve materials, and levels of assistance available in the library; on library instruction and public relations methods; on the availability of special equipment and training in the use of that equipment; on internal physical accessibility; and on emergency procedures. This article raises some of the questions disabled students, and those providing service to disabled students, should raise about the libraries on their campuses.

PUBLIC SERVICES

Public Services Departments generally include those services provided by the reference, circulation, and reserve departments of the academic library. It is these frontline departments that provide users with assistance in locating specific material, using reference books, using the catalogs, checking out books, and accessing instructional materials held on reserve for specific classes. The disabled student may need modifications in the basic services provided in order to accommodate functional limitations and different learning styles.

The foundation of any practical program purporting to oversee architectural and programmatic access to libraries for disabled patrons is the person who is responsible for coordinating that program. It is important to know who that person is and what his or her responsibilities are to the disabled patron and to the library. It is not likely that responding to the needs of the disabled library user will be the person's only area of activity. Nevertheless, it is this person who should be knowledgeable about all aspects of services in the library for disabled patrons and to whom one should first address requests for accommodation.

Reference librarians provide assistance to all patrons in using catalogs or indexes and in finding material in the reference collection. The circulation staff administers the policies regulating the borrowing and returning of material from the library. A separate, and usually more restrictive, set of guidelines governs the use of course-reserve materials. The information needs of the disabled patron may present circumstances that lead to one-time or permanent modifications in public service policies.

Some aspects of public service policies that the disabled library patron should investigate are:

1. Is assistance needed in the physical retrieval of card catalog drawers? If an online computer catalog is being used, is the terminal accessible to wheelchair users? Is the terminal equipped with modifications allowing independent access by blind or visually impaired students?
2. Are periodical indexes placed so that they can be retrieved and used without assistance?
3. Are there standard reference materials (e.g., dictionaries or encyclopedias) available in nonprint formats?
4. Is there at least one microfilm reader or reader/printer accessible to wheelchair users?
5. How much assistance can the reference desk staff provide? Is reference assistance available by telephone? By mail?
6. Is it possible to arrange an appointment for extended reference/research assistance?
7. Does the library provide readers or assistants for help in the catalog? In browsing? In using recording material?
8. Is there a special reading or listening room? A special equipment room?

Does this room appear to be significantly isolated or segregated from non-disabled users?

9. Are book loan periods sufficient? Can materials be checked out by telephone? Is telephone renewal available? Can readers check out materials for the disabled patron?
10. Will library staff retrieve materials from book stacks? Is there a document delivery service available?
11. Can reserve materials be checked out for extended periods? Are there restrictions on taking reserve material from its home location to the location of the special equipment room? Are reserve materials available in special formats?
12. Will the library photocopy material for the student? Are photocopy machines accessible? Are change machines accessible? Is there assistance available in operating photocopying equipment?

LIBRARY INSTRUCTION

The coordinator of services for disabled library patrons should also be responsible for, or involved with, insuring that the academic community is aware of the services available to the disabled patron. Particular facets of the library/bibliographic instruction program worth investigating include:

1. Are there printed materials that explain library services and accessibility? Are they available in braille? In large print? On audio tape?
2. Are tours available? If not, what provisions for mobility orientation are available?
3. Are formal classes in library use and the materials used in those classes adapted for use by disabled persons?
4. Is there a program of library or research instruction that is a standard part of academic instructional programs (e.g., Freshman English)? If so, then how responsive is the program to the needs of the disabled student?

EQUIPMENT AND TRAINING

Access to library materials can be enhanced by specialized equipment or by modifications of existing equipment. The disabled library patron will want to determine:

1. Are computer stations, and video/audio media stations wheelchair-accessible? Have modifications been made to controls to accommodate people with reduced fine-motor coordination?
2. What type of equipment is available to assist blind and visually impaired students? Is there training available on this equipment? Who does the training?

3. Are library-based computer facilities accessible to physically and visually handicapped individuals?
4. Are video and audio playback machines equipped with amplification? With closed captioning capabilities?
5. Is there a TDD available in the library? Is it conveniently located? Who has access to it? Under what conditions? Are there public telephones with amplified handsets available?

INTERNAL PHYSICAL ACCESSIBILITY

The provision of parking and ramps into the building is really only the beginning of the library's responsibility in the area of basic physical access to its facilities. The disabled patron needs to be able to enter and exit and move from floor to floor. The student should move from room to room with ease. For the wheelchair user in particular there should be available work space and restroom facilities (in sufficient numbers) that will accommodate wheelchairs. Internal physical accessibility may be evaluated by asking:

1. If there are turnstiles at the entrance, are there alternative means of getting through that barrier for users of mobility aids that do not allow passage through such a device?
2. When exiting the building, in addition to the turnstiles, is a special detection device in place through which *all* patrons must pass? If so, is the clearance sufficient to allow a wheelchair to pass through?
3. Are internal doors (to book stacks or study areas, for example) equipped with appropriate handles? Are they very heavy? Are they difficult to open and keep open until one can get through?
4. Are wheelchair accessible tables or study carrels available in areas that allow for integration of disabled and nondisabled library users? (NOTE: Separate rooms for equipment location and use or for reader/disabled patron interactions are acceptable, but separation for general purposes is not.)
5. Is there enough space between shelves and between shelves and furniture to allow unobstructed passage?
6. What is the location, number, and true level of accessibility of restrooms/lavatories/water fountains in the building? (This is especially important in so-called "renovated" older buildings.)

EMERGENCY PROCEDURES

The disabled library patron should know the library policies regarding emergency situations in the library.

1. Are there visual and auditory emergency signals?
2. What level of assistance can the mobility impaired expect?
3. Where are the emergency exits?

SUMMARY

The print and nonprint materials found in the academic library are necessary for the complete education of any student in college today. For the disabled student, even the most respected and thorough collection is of no value if it cannot be accessed. In this instance, access means more than getting into the building. It means being able to use tools of the library (e.g., book catalogs or periodical indexes), it means being able to physically retrieve the material, it means being able to use alternatives to print, and it means being able to do all of these things with maximum independence. Disabled students and disabled student service providers need to be well informed on how accessible their library truly is.

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Availability of Computer Services in Postsecondary Institutions: Results of a Survey of AHSSPPE Members

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ABSTRACT

AHSSPPE member institutions were surveyed to determine current provision of computer services. Specific availability of computers for disabled students, availability of general purpose/educational software, availability of adaptive equipment and software for computer access, and provision of general student services were assessed. Results indicated that patterns of specific computer availability for disabled students differed from campus-wide student computer availability and that adaptive accommodations to allow computer access by severely disabled students are not widely available. Results are discussed in relation to the provision of computer services to postsecondary students and the technology information needs of postsecondary service providers.

There is growing recognition that computers have the potential to improve educational opportunities for postsecondary students (e.g., Brill, 1987; Brown, 1987; Horn, Shell, & Severs, 1986b). Specific technologies to provide adapted access to computer resources are now available (see Brandenburg & Vanderheiden, 1987a, 1987b, 1987c; Brown, 1987; Keddy, 1988). Also, a growing body of literature indicates that specific disability-related computer applications such as augmentative speech and writing systems and special computer-based programs for disabled students can be effective in enhancing disabled students' educational opportunities and performance (e.g., Farra, Morelli, & Balfe, 1988; Horn, Shell, & Benkofske, in press; Horn, Shell, & Severs, 1988; Margolis & Price, 1986; Shell, Horn, & Severs, 1988). As a result of these developments, postsecondary disabled student service providers are becoming increasingly involved in providing computer services in the context of both accessibility to existing institutional computer resources and provision of specialized computer services for disabled students.

A primary function of the AHSSPPE Computer Special Interest Group is to provide information to member institutions on the availability, implementation, and effectiveness of computer applications. A necessary initial step in fulfilling this function is a determination of current levels of computer usage in postsecondary programs. Because there is little information on the extent of service applications in postsecondary institutions, this survey was undertaken to gain baseline information on existing computer usage by AHSSPPE members.

METHOD

Survey Instrument

The survey instrument contained three sections. A demographics section contained questions on the number of disabled students served, institution size, and type of institution (public or private; 2- or 4-year). A section on student service computer applications assessed the types of computers available for use by the general student population and specifically for use by disabled students, the types of general purpose programs available for disabled students, and the adaptive equipment and software being used. Last, a section on general support services assessed the types of noncomputer services (e.g., interpreters, tutoring) provided.

Sample and Procedures

Surveys were sent to all AHSSPPE member institutions included in the 1987 AHSSPPE membership list. The survey was sent in a mailing of the newsletter of the Educational Center for Disabled Students at the University of Nebraska–Lincoln during May 1988. Of the approximately 600 surveys sent, 123 completed surveys were returned. Demographics for the respondent sample are reported in Table 1. The demographic breakdown of the sample corresponds to previous profiles of the AHSSPPE membership obtained in other surveys (e.g., Pierce, 1984; Sergent, Carter, Sedlacek, & Scales, 1988); therefore, we believe that the obtained sample is representative of AHSSPPE member institutions.

Data Analysis

Descriptive statistics (frequencies and percentages) were computed for all questions. Contingency table analysis using Chi square, with Yates' correction applied to all tables containing cells with expected frequencies less than 5, was used to analyze differences between public and private institutions and 2-year and 4-year institutions. Because of the small number of private institutions in the sample (15), caution should be used in interpreting differences between public and private institutions.

RESULTS

The number of disabled students attending respondent institutions averaged 217 for the entire sample. The number of disabled students did not substantially differ be-

Table 1
Sample Demographics

	N	%
Institution type		
Public	105	85
Private	15	12
Unknown	3	3
4-year college/university	68	55
2-year community college	47	38
Unknown	8	7
Number of students		
500– 1,000	4	3
1,000– 5,000	34	28
5,000–10,000	28	23
10,000–15,000	18	15
15,000–20,000	13	11
20,000–25,000	13	11
Over 25,000	9	7
Unknown	4	3

tween 4-year (M = 229) and 2-year (M = 216) institutions. Public institutions, however, had considerably more disabled students (M = 237) than did private institutions (M = 58).

Computer Availability

Seventy percent of respondents (86 of 123) indicated that computers were specifically available to disabled students separate from those available to the general student population. There was no difference between 2- and 4-year institutions in computer availability for disabled students; however, computers were more likely to be specifically available to disabled students in public institutions (75%) than in private institutions (27%) χ^2 (1, N = 120) = 12.33, $p < .001$.

For the general student population, common types of computers were reported as being available by the following percentages of respondents: IBM PC (85%), the Apple II series (81%), Apple Macintosh (59%), and mainframe terminals (76%). IBM PC computers (median availability 30–49) and terminals (median availability 30–49) were provided in greater numbers than Apple II or Apple Macintosh computers (median availability 10–19). For disabled students, the computers reported as being specifically available by the highest percentage of respondents were the IBM PC (48%) and Apple II series (45%). Mainframe terminals were reported as being specifically available to disabled students by 28% of respondents, and Apple Macintosh computers were reported as being specifically available in 14% of institutions. The median availability for all computers was 1–9.

A number of differences between computer availability for the general student population and for disabled students are apparent in the data. While IBM PC and

Apple II computers were available in about equal numbers to the general student population, the number of IBM PC computers available to disabled students was considerably higher than the number of Apple II computers. Like the computer availability for the general student population, IBM PC and Apple II computers were specifically available to disabled students in about the same number of institutions; however, the number of IBM PC and Apple II computers available also was about equal. This would suggest that when compared to the general population of students disabled students have greater proportional availability of Apple II computers and less proportional availability of IBM PC computers. This is reflected in the fact that IBM PC computers were not provided by 31% (27 of 86) of the institutions providing specific computer availability for disabled students.

A substantial difference in mainframe terminal availability was also apparent. Mainframe terminals were provided to the general student population at 76% of institutions and were provided in higher numbers than all computers except the IBM PC. Only 28% of institutions, however, specifically provided disabled students with terminals. Overall, the findings indicate that when disabled students are specifically provided with computer resources, they are not necessarily provided with resources equivalent to those available to the general student population.

General-Purpose and Educational Software Availability

General-purpose and educational/training software available to disabled students is summarized in Table 2. Basic general-purpose (word processing, proofing, spreadsheet, and database) software was available to disabled students in a high percentage of institutions. The availability of other general-purpose software such as programming languages, electronic mail, and graphing was lower. These findings indicate that the standard application programs necessary for basic computing functions are readily available to disabled students; however, more sophisticated programs may not be available.

Educational and training software was available at fewer institutions than general-purpose software. Also, educational programs for language skills (reading, writing, spelling) were available more frequently in 2-year institutions than 4-year institutions. These findings likely reflect the fact that basic skills education is not normally a primary function of postsecondary institutions and that basic skills courses are more common in 2-year community colleges than in 4-year colleges and universities. The relative lack of availability of educational/training software may be problematic, however, given findings by Horn et al. (1986a, 1986b) that disabled students often lack basic skills and require language and other types of educational training to utilize computer services fully.

Adaptive Equipment and Software Availability

While many students with moderate disabilities can operate computers without modification, students with more severe physical or sensory disabilities need adaptive modifications to use computer resources fully. The adaptive modifications assessed in the survey were based on equipment and software that has been shown to be necessary for computer access (Brown, 1987) or for the development

Table 2

General-Purpose and Educational Software Available to Disabled Students

	Institutions Providing	
	N	%
General purpose		
Word processing	117	95
Proofing/Spell checking	112	91
Spreadsheet	96	78
Data file/base	99	81
Communications	65	53
Graphing/Drawing	79	64
Programming languages	78	63
Electronic mail	39	32*
Educational/Training		
Games	57	46**
Reading	66	54**
Spelling	68	55**
Writing	74	60**
Study skills	54	44
General knowledge	45	37
Problem solving	48	39
Typing	60	49†

*Available significantly more frequently in 4-year institutions.

**Available significantly more frequently in 2-year institutions.

†Available significantly more frequently in public institutions.

of compensatory systems such as augmentative speech or writing systems (Horn et al., in press; Horn et al., 1988).

The availability of adaptive equipment and software is summarized in Table 3. The most frequently available adaptive modifications were those for computer access by visually impaired students. This was true for both adaptive equipment (e.g., large print monitors, voice synthesizers) and adaptive software (e.g., speaking word processor). Even though modifications for visually impaired students were available most frequently, only voice synthesizers (60%) were provided by more than half of all respondent institutions. Also adaptive equipment for visually impaired students was more likely to be available in public than in private institutions.

Modifications for students with physical disabilities were not extensively available. The equipment modification most frequently available was a keyboard guard; however, it was available in only 22% of institutions. No other adaptive equipment was available in more than 18% of institutions. The adaptive software most frequently available was a keyboard alteration program (24%). No other adaptive software was available in more than 15% of institutions.

Adaptive equipment and software were more likely to be available in institutions that have computers specifically available for disabled student use (see Table 3). This would suggest that adaptive modification is more likely when specific computers are provided through disabled student service programs than when the com-

Table 3

Adaptive Equipment and Software Available to Disabled Students

	All Institutions		Provide Specific Computers	
	N	%	*N*	%
Equipment				
Large print monitor	61	50*	52	61
Voice synthesizer	74	60*	62	72
Braille printer	41	33	37	43
Optical character reader	24	20**	19	22
Single switch input	22	18	19	22
Morse code input	6	5	4	5
Unicorn board/alternate keyboard	12	10	11	13
Keyboard guards	27	22	22	26
Augmentative speech communication device	11	9	9	11
Visually impaired workstation	50	41	45	52
Talking terminal	47	38**	42	49
Laptop portable computer	18	15	11	13
Software				
Scanning program	18	15	13	15
Screen-to-speech program	43	35	40	47
Speaking word processor	39	32	35	41
Specialized typing training program	17	14	16	19
Keyboard alteration program	29	24	27	31
Macro/Abbreviated entry program	18	15**	15	17
Cognitive retraining program	8	7	8	9
Word prediction program	16	13	15	17

*Available significantly more frequently in public institutions.

**Available significantly more frequently in 4-year institutions.

puters available to disabled students are provided as part of general campus-wide computing resources.

Overall, the findings indicate that AHSSPPE member institutions are just beginning to implement the adaptive accommodations needed to provide basic computer access and other types of computer-based services. The most prevalent adaptive modifications are those for visually impaired students, available to some extent in approximately half of the responding institutions. Adaptive modifications for physically disabled students appear to be only infrequently provided, with less than 25% of institutions providing any type of accommodation. Students with severe physical or visual disabilities need adaptive accommodation to access and use computers (e.g, Brown, 1987; Horn et al., 1988; Keddy, 1988). The findings suggest these students have limited access in most postsecondary institutions to the computer resources available to the general student population and limited availability of compensatory computer applications (e.g., Horn et al., 1988) that have been shown to improve the academic performance of students using them (Shell, Horn, & Severs, 1988).

Relation of Computer Services and Other Student Services

To determine how the availability of computer services provided to students compares to the availability of other types of services offered in postsecondary programs, respondents were asked to indicate the availability of 16 student services at their institutions. Table 4 provides a summary of the availability of these services.

The services listed in Table 4 can be clustered into two groups. The first group, available at approximately 90% or more of the institutions, consists of access-related services (e.g., interpreters, notetakers), counseling, and academic services (e.g., tutoring, language instruction, study skills instruction). These services were offered at levels consistent with the findings of Sergent et al. (1988) and appear to constitute, along with services mandated by Section 504, a basic program of services perceived as necessary and offered by most student service providers. The second group, available at about one-third of the institutions on the average, consists of services such as speech or physical therapy, attendant care, and transportation. These were also found to be offered less frequently by Sergent et al. (1988) and appear to constitute a group of auxiliary services that, while desirable, are not provided as part of the basic service program by most institutions.

In relation to these groups of services, the availability of computers specifically for disabled students (70% of institutions) approaches the availability of the basic

Table 4

Services Available to Disabled Students

	General Services Only		Disabled Student Services Only		Both		Total	
	N	%	*N*	%	*N*	%	*N*	%
Subject tutoring	43	35	6	5	70	57	119	97
Assessment	11	9	52	42	15	12	78	64
Interpreters	8	7	89	72	2	2	99	80
Readers	13	11	97	79	8	7	118	96*
Notetakers	13	11	89	72	11	9	113	92*
Counseling								
Vocational	32	26	4	3	81	66	117	95*
Academic	32	26	2	2	89	72	123	100
Personal	27	22	3	2	92	75	122	99
Speech therapy	28	23	6	5	7	6	41	33**
Physical therapy	28	23	5	4	4	3	37	30**
Other medical	59	48	1	1	10	8	70	57**
Attendant care	9	7	29	24	3	2	41	33**
Transportation	8	7	20	16	15	12	43	35**
Reading instruction	58	47	5	4	47	38	110	89*
Writing instruction	57	46	1	1	52	42	110	89*
Study skills instruction	60	49	3	2	52	42	115	94*
Special courses	28	23	10	8	25	20	63	51*†

*Available significantly more frequently in public institutions.

**Available significantly more frequently in 4-year institutions.

†Available significantly more frequently in 2-year institutions.

services group. Adaptive equipment and software, however, are available at much lower frequencies. Only adaptive equipment for visually impaired students (large print monitors and voice synthesizers) is being provided at levels approaching those of basic services. Other adaptive equipment and software, particularly those for physically disabled students, are provided at frequencies equivalent to or below the frequencies of the auxiliary services group. Thus, the patterns of computer and adaptive modification availability would suggest that these are being provided as auxiliary services rather than as basic services, even though numerous authors have argued that computer access is a necessary component of providing equal educational opportunities to disabled students (e.g., Brill, 1987; Burkhead, Sampson, & McMahon, 1986; Keddy, 1988).

DISCUSSION

The results of this survey indicate that computer access and services have not yet been widely implemented in postsecondary disabled student service programs. While virtually all respondents indicated that campus-wide computer resources were in accessible locations, the survey results indicated limited availability of the adaptive accommodations necessary for computer operation by students with severe physical or visual impairments. Visually impaired students who need either enlarged screen display or voice output to operate a computer can access and use computers in only about 50% of AHSSPPE member institutions. Students with physical impairments who require support to use the keyboard (e.g., a key guard) or require alternate input methods to operate a computer (e.g., switch entry) can access and use computers in fewer than 25% of AHSSPPE member institutions. It is apparent, therefore, that computer resources are generally not available to students who require any adaptive support to use a computer.

The survey results also indicated that adaptive accommodations are more likely to be available in institutions that have computers specifically designated for disabled student use. This would suggest that an active role by disabled student service providers, either by providing computers through their offices or by working with campus computer services to allocate specific computers for disabled students, will likely be necessary to achieve an appropriate level of computer access for disabled students.

Access to campus computer resources is only one aspect of computer services for disabled students. A growing number of projects have shown that the provision of specific computer-based services can positively affect disabled student academic performance (e.g., Farra et al., 1988; Horn et al., in press; Laine & Harper, 1988; Shell et al., 1988). These projects are not based on access to existing campus computer resources; rather, they provide compensatory computer applications directed specifically at allowing disabled students to perform educational tasks such as writing or verbal communication. These applications generally use standard computers and general-purpose software, primarily word-processing programs (see

Horn et al., in press) that are available in most institutions (according to the survey results). Thus, the basic components of compensatory educational systems are currently available to most postsecondary service providers.

Two limitations on the provision of compensatory educational systems are apparent in the survey results, however. First, as with access to campus computer resources, severely physically or visually impaired students require adaptive modifications to operate compensatory systems. Thus, the limited availability of adaptive equipment and software, discussed previously, limits the opportunities these students have to take advantage of compensatory systems.

Second, programs providing compensatory applications (e.g., Farra et al., 1988; Horn et al., 1988; Horn et al., in press; Laine & Harper, 1988; Margolis & Price, 1986) have generally found high use levels, a need for training of application programs and a need to provide ongoing support to students using the systems. These aspects of providing compensatory systems generally require that they be implemented in specific computer facilities for disabled students rather than in a campus computer user room. The potential for implementation of these systems is limited, therefore, by the low numbers of computers specifically available to disabled students indicated in the survey findings.

While the survey results indicate that considerable work remains before disabled students have access to basic computing resources or compensatory applications at all institutions, the results must be viewed within the context of the general development and availability of technology for disabled students. Adaptive modifications and compensatory applications are recent developments, and information about this technology has been broadly disseminated only in the last few years. A survey conducted even 2 or 3 years ago would likely have found virtually no availability of computers specifically for disabled students or adaptive modifications for access. Thus, the existing levels of availability of adaptive equipment and software indicate in many respects a rapid, positive response by postsecondary service providers to technology developments.

If the availability of computers and adaptive accommodations for disabled students is to grow, there is a need for greater dissemination of information about technological developments. It is not enough to simply have a piece of adaptive equipment on hand. To be useful, equipment and software must operate efficiently and effectively and must perform relevant educational tasks. Postsecondary disabled student service providers, therefore, must be able to intelligently guide institutional acquisition of appropriate adaptive equipment and software and develop effective, educationally relevant applications. To support service providers in these efforts, dissemination must move beyond resource guides or lists of recommended equipment (e.g., Keddy, 1988) to include information on how to select equipment, train students and staff, and evaluate the effectiveness of technology applications. These areas are where the AHSSPPE Computer SIG and others in the technology field should target future dissemination efforts.

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on-campus reporter

Interaction Between Disabled and Nondisabled College Students and their Professors: A Comparison

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ABSTRACT

According to previous studies, students with disabilities and professors agree that it is desirable that students initiate contact concerning needed course adjustments, though the students rate student-initiated behaviors as less appropriate than do professors. The results of this discrepancy could be that students with disabilities request fewer adjustments than their professors would be willing to grant, perhaps even fewer than their nondisabled peers request and are granted. The goal of this study was to investigate this issue. For identical student- and professor-initiated behaviors, appropriateness ratings were obtained from 37 disabled and 62 nondisabled students and from 74 professors of disabled students and 96 professors of nondisabled students. Students with disabilities and their professors made ratings with reference to professor–disabled student interaction while nondisabled students and their professors answered questions concerning professor–nondisabled student interaction. Results indicate that (1) students with disabilities felt that it is less acceptable to request or be accorded special consideration than did nondisabled students and (2) they felt that it is less appropriate for professors to single out a student for special attention. While professors believed that it is more appropriate to accord special consideration to a disabled than to a nondisabled student, they also felt that it was less acceptable for a pro-

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fessor to single out a disabled student for special attention. The implications of the findings for research and for the design of skills-training programs for disabled students and their professors are discussed.

Many government agencies and citizens' rights groups have actively advocated greater access for disabled students to the higher educational system. As a result, many discriminatory college admissions practices have been eliminated in North America, and physical accessibility has been improved. These changes have allowed increasing numbers of people with disabilities to enter institutions of higher education (Fichten, 1988; Fichten, Bourdon, Creti, & Martos, 1987; Stilwell, Stilwell, & Perrit, 1983), and to find suitable college programs (HEATH Resource Center, n.d.; Houwing, 1986). But real access to postsecondary education only *begins* with admission. Students with disabilities may require special consideration from their professors in order to successfully complete course requirements.

Factors relevant to the successful integration of students with disabilities are still being defined (Jarrow, 1987). Programming to facilitate interaction has often relied on experiences from elementary and high schools. Even in the lower levels of schooling, mainstreaming programs have enjoyed only qualified success. For example, Beatrice Wright (1980), one of the best known researchers in the field, has concluded that "regrettably, many change (mainstreaming) programs are ineffective and may even contribute to disabling myths about disability."

Ambivalent results are due partly to lack of needed services, advocacy programs, equipment, and architectural modifications and partly to inadequate student-teacher training (English, 1971; Gresham, 1982; Hirshoren & Burton, 1979; Walker, 1980). In earlier years, only the few extraordinary students with disabilities attended university-level programs. Now that increasing numbers of "average" students who have disabilities are enrolled in postsecondary educational institutions, there is an urgent need to develop effective skills-training programs for students with disabilities who are about to enter college and for the professors who teach them.

STUDENT–PROFESSOR RELATIONS

Difficulties in the teaching/learning process can arise because of professors' discomfort with students who have disabilities (Nathanson, 1983) and because of students' reluctance to seek special consideration. Uncertainty about what does and does not constitute appropriate behavior also contributes to problems for both groups.

Students, both disabled and nondisabled, have a variety of concerns about relating to professors. What should be done when one cannot hear the professor? Is it appropriate to ask for extensions when course requirements are difficult to meet? Effective learning cannot take place when students do not know how or when to obtain needed course adjustments.

Similarly, teaching is hampered when professors are ignorant of appropriate behaviors toward students who have disabilities. Questions noted by Alexander (1979) pinpoint some professor concerns:

> Must topics such as blindness, paralysis, or sexuality be avoided? Should any specific words be avoided? Will any changes in classroom teaching techniques be necessary? How can disabled students be tested? How will blind and wheelchair user students deal with their mobility problems? Will disabled students be able to meet term paper deadlines? How will the instructor communicate with a deaf student? (p. 196)

DIFFERENCES BETWEEN STUDENTS' AND PROFESSORS' VIEWS

Before educational programs for students with disabilities and their professors can be designed and evaluated, the components of effective behavior must be identified. A recently completed study (Fichten, Amsel, Bourdon, & Creti, 1988; Fichten, Bourdon, Creti, Amsel, & Martos, 1986) indicated that professors are less comfortable with disabled than with nondisabled students. The findings also showed that professors who have taught students with disabilities are more at ease with disabled students and more interested in teaching them in the future than those who have not had previous experience. The data also indicated that professors and disabled students agree that it is more desirable for students to approach the professor concerning needed course adjustments than for the professor to approach the student. Students with disabilities, however, evaluated most of these help-seeking behaviors as less appropriate than professors believed them to be. Overall, the findings of this study suggested that the students are in a bind; they feel that the onus is on them to initiate the contact yet they hesitate to do so, questioning the appropriateness of such action.

Is this underestimation of appropriateness specific to disabled students or does it just reflect some general professor–student difference? Students with impairments want to do well in college not because of their *disabilities* but because of their *abilities*. Disabled students may feel it is inappropriate to request special consideration because they believe that this singles them out and devalues their accomplishments. However, professors may grant special treatment more readily to students in general (regardless of disability) than disabled students assume is the case.

It is equally possible to perceive the difference as an overestimation of appropriateness on the part of the professors. Professors may be motivated by pity, thereby perpetuating the very discriminatory system that students with disabilities must quash if they are to compete with their nondisabled peers on the basis of equal status.

OBJECTIVES OF THIS STUDY

This investigation attempted to evaluate the basis for differences in appropriateness perceived by students and by their professors. To do this, disabled and nondisabled students rated the same student and professor behaviors. Comparisons of these ratings were used to determine (1) whether professors accord special consideration to students with disabilities more readily than to nondisabled students and (2) whether disabled and able-bodied students differ in their evaluations of the appropriateness of special treatment.

METHOD

A questionnaire concerning the appropriateness of 32 student behaviors (e.g., "student asks for professor's permission to tape lectures") and 44 professor behaviors (e.g., "professor agrees to allow a student to tape lectures") was completed by college students with physical disabilities and group-matched nondisabled college students. Students with disabilities completed this questionnaire with reference to professor–disabled student interaction; nondisabled students answered questions concerning professor–nondisabled student interaction. In addition, all students indicated how comfortable they were with their professors and how satisfied they were with the treatment received from professors. The same questionnaire was completed by professors of disabled students and group-matched professors of nondisabled students. Professors of disabled students completed the questionnaire with reference to professor-disabled student interaction while professors of nondisabled students completed the questionnaire concerning professor-nondisabled student interaction.

Participants

Participants were 37 college and university students with various physical disabilities, 62 group-matched nondisabled students, 74 college and university professors who had taught disabled students, and 96 group-matched professors of nondisabled students. All students with disabilities and the 74 professors who had taught disabled students were participating in a larger study (Fichten et al., 1988).

The nondisabled student sample was obtained by contacting two able-bodied students for each of the disabled student participants; able-bodied students were selected so as to match the disabled students on sex, educational institution, and program of studies. Professors of nondisabled students were solicited by contacting, on a random basis, two professors for each of the professors of disabled students; the same matching criteria used for students were used to select professors. Data from all subjects who returned completed questionnaires were used.

Students

The average age of the 37 disabled student participants was 26 years (range = 19–37). They had been disabled for an average of 20 years. Of the disabled students, 24% were wheelchair users, 24% had a hearing impairment, 18% a visual impairment, 18% cerebral palsy, and 16% other physical disabilities (mainly neuromuscular). Thirty-two percent attended a junior/community college and 68% attended a university.

Mean age for the 62 nondisabled students was 22 (range =18–48) [it is common for disabled students to be older than their nondisabled peers (G.N. Wright, 1980)]. Forty percent attended a junior/community college and 60% attended a university.

Professors

Most of the 74 professors who had experience with disabled students had taught several students with disabilities; the average number of disabled students taught was 3. Sixty-one percent of the professors taught primarily at a junior/community college and 39% at a university. Of the 96 professors of nondisabled students, 71% taught at a junior/community college and 29% at a university.

Procedure

Participants completed either the disabled or the nondisabled version of the Professor–Student Questionnaire. The disabled version of the measure consisted of a listing of 196 possible student and professor behaviors (for details, see Fichten et al., 1988). The nondisabled version retained the 32 student and 44 professor behaviors that were applicable. The questionnaire presented a variety of situations organized under such headings as class activities, time issues, and grading. For each situation a number of student and professor behaviors were listed. For example, one situations and related behaviors was:

> In a class where a student has difficulty taking notes:
> (a) student asks to use professor's notes
> (b) professor refuses to lend his/her notes
> (c) professor agrees to lend his/her notes
> (d) student asks professor's permission to tape lectures
> (e) professor refuses to let the student tape his/her lectures
> (f) professor agrees to let the student to tape his/her lectures

All student and professor participants rated the appropriateness of each behavior on a 10-point scale. Cronbach's alpha coefficients for the Professor-Student Questionnaire indicate reasonable internal consistency for this measure for both student (.738) and professor (.802) behaviors. In addition, using 10-point scales, all students indicated how comfortable they were with their professors and how satisfied they were with the treatment they received from professors.

RESULTS

Results indicate that disabled and nondisabled students did not differ significantly in their level of comfort with professors (*M* = 7.46, *M* = 7.06, respectively) or on satisfaction with treatment received from professors (*M* = 7.60, *M* = 6.90, respectively). On appropriateness ratings, however, there were a number of important differences.

Comparisons of Students' Appropriateness Ratings

Student Behaviors

Comparisons of nondisabled and disabled students' responses concerning behaviors of students similar to themselves are detailed in Table 1. Results indicate that on 10 of the 13 differences found, students with disabilities felt that it was *less* acceptable to ask for special consideration than did nondisabled students. For example, disabled students felt that it was less appropriate to ask the professor for the course outline and requirements before the start of classes than did nondisabled

Table 1

Comparison of Students' Appropriateness Ratings: Student Behaviors

		Mean Ratings By			
Student Behaviors Rated by Students	Direction of Difference	Disabled Students (D)	Nondisabled Students (N)	*df*	*t*
Seek out special consideration					
Ask professor for the course outline and requirements before the start of classes.	N > D	7.50	8.42	96	1.81
Ask the professor whether the course is appropriate.	N > D	5.50	7.18	96	2.47*
Explain to the professor during the first few days of classes that one may frequently be late for class (leave early).	N > D	5.25	6.56	96	1.93
Use equipment in class without having consulted the professor.	N > D	3.14	4.54	94	2.02*
Frequently ask the professor for needed clarifications.	N > D	5.69	8.31	96	4.43†
Ask professor for further explanations after almost every class.	N > D	4.86	5.87	97	1.74
Ask for extensions on assignments when course requirements are difficult to meet.	N > D	5.67	6.95	95	2.54*
Tell the professor that he/she is expecting too much when course requirements are difficult to meet.	N > D	3.69	5.00	94	2.49*
Ask for a make-up exam or extra assignments when the final grade is a failure.	N > D	4.14	6.21	95	3.62†
Ask the professor to write, whenever possible (e.g., use blackboard, overhead) if student has difficulty understanding the professor's speech (accent, audibility).	D > N	7.63	6.56	90	1.97*
Ask professor to exempt a student from reading aloud in class.	D > N	6.67	5.18	92	2.19*

Table 1
Continued

Student Behaviors Rated by Students	Direction of Difference	Mean Ratings By Disabled Students (D)	Mean Ratings By Nondisabled Students (N)	*df*	*t*
Fail to seek out special consideration					
Fail to approach the professor about course concerns.	D > N	4.31	3.11	95	1.80
Fail to act if student cannot hear classmates' comments in class.	N > D	2.34	3.55	92	2.27*

Note. 10 = very appropriate, 1 = very inappropriate.
$p < .10$ unless otherwise marked
*$p < .05$
**$p < .01$
†$p < .001$

students. The three instances where disabled students felt that asking for special consideration was more acceptable than did nondisabled students all involved requesting changes that would allow someone who has difficulty hearing or speaking to better adapt to classes.

Professor Behaviors

As the results in Table 2 show, students with disabilities were also generally *less* approving than were nondisabled students of professors initiating or granting special consideration. For example, students with disabilities felt that it was less appropriate for the professor to allow a student to write extra assignments and make-up exams to help improve grades if the course requirements were difficult to meet than did nondisabled students. They also felt that it was less appropriate than did nondisabled students for professors to single out a student for special attention such as suggesting that a student go to the learning or tutorial service for extra needed help. Yet students with disabilities, compared to nondisabled students, also believed that it was less appropriate for a professor to avoid dealing directly with a student regarding problems.

Comparisons of Professors' Appropriateness Ratings

Student Behaviors

Comparisons detailed in Table 3 show that, generally, professors of disabled students believed it more acceptable for students to ask for special consideration than did professors of nondisabled students; 73% of the differences on student behaviors reflected this tendency. For example, professors of disabled students believed it

Table 2

Comparison of Students' Appropriateness Ratings: Professor Behaviors

Professor Behaviors Rated by Students	Direction of Difference	Mean Ratings By Disabled Students (D)	Mean Ratings By Nondisabled Students (N)	*df*	*t*
Grant special consideration					
Give a student extensions when course requirements are difficult to meet.	N > D	5.92	7.08	96	1.85
Reduce the amount of work required when course requirements are difficult to meet.	N > D	3.58	4.47	96	1.85
Allow a student to write extra assignments and make-up exams to help improve grades if course requirements are difficult to meet.	N > D	5.59	7.39	94	3.12**
Offer a student a make-up exam or extra assignments when the student fails if this is contrary to the professor's usual practice.	N > D	3.58	5.66	95	4.16†
Fail to grant special consideration					
Fail to repeat classmates' comments in class when these are not audible to a student.	D > N	4.56	3.15	92	2.52*
Refuse to allow student to tape lectures.	N > D	2.42	3.40	96	1.88
Refuse a request for special adjustments when course requirements are difficult to meet.	N > D	2.86	4.94	95	3.38†
Single out a student for special attention					
Warn a student that the course is very difficult.	N > D	3.43	6.32	97	5.37†
Periodically inform a student about how he/she is doing in the course if this is contrary to the professor's usual procedure.	N > D	4.08	6.19	96	3.38†

Table 2
Continued

Professor Behaviors Rated by Students	Direction of Difference	Mean Ratings By Disabled Students (D)	Mean Ratings By Nondisabled Students (N)	*df*	*t*
Speak to a student if he/she is not participating in class activities if this is contrary to the professor's usual procedure.	N > D	5.19	7.35	96	3.28†
Suggest that a student go to the learning or tutorial service for extra help when course requirements are difficult to meet.	N > D	6.69	7.69	95	1.77
Avoid dealing directly with a student regarding problems					
Fail to inform a student if the professor notices problems with inappropriate behavior (e.g., continually interrupting others).	N > D	3.20	4.34	95	1.66
Ask someone else to speak to a student who has problems with inappropriate behavior.	N > D	2.17	3.40	96	2.13*
Tell a student that everything is OK and to just keep on trying when the student is doing poorly in the course.	N > D	2.33	3.35	96	2.04*

Note. 10 = very appropriate, 1 = very inappropriate.
$p < .10$ unless otherwise marked
*$p < .05$
**$p < .01$
†$p < .001$

more appropriate for a student to ask the professor for the course outline and requirements before the start of classes than did professors of nondisabled students.

Professor Behaviors

On professor behaviors, the findings in Table 4 indicate that professors of disabled students also believed that it is more appropriate to grant special considerations, such as agreeing to allow a student to tape lectures, than did professors of nondisabled students. This was true for 86% of items where differences were found. Yet

Table 3

Comparison of Professors' Apropriateness Ratings: Student Behaviors

		Ratings by Professors of			
Student Behaviors Rated by Professors	**Direction of Difference**	**Disabled Students (D)**	**Nondisabled Students (N)**	*df*	*t*
Seek out special consideration					
Ask professor for the course outline and requirements before the start of classes.	D > N	9.19	8.07	165	2.57*
Approach the professor before the course starts if student forsees problems.	D > N	7.21	6.32	162	1.73
Use equipment in class without having consulted the professor	D > N	4.00	3.06	161	1.93
Be frequently late for class.	D > N	3.44	2.38	160	2.52*
Ask professor for further explanations after almost every class.	D > N	6.18	5.31	163	1.89
See professor about personal problems.	D > N	5.37	4.45	162	1.94
Ask for regular weekly appointment to see the professor concerning course material.	D > N	6.76	4.71	164	4.23†
Ask to use the professor's notes.	D > N	4.44	3.09	158	2.78**
Ask professor for permission to tape lectures.	D > N	8.88	7.72	161	2.79**
Ask the professor to exempt a student from reading aloud in class.	D > N	7.87	4.84	153	6.29†
Ask for exemptions from certain course requirements when these are difficult to meet.	D > N	5.79	3.02	160	2.62**
Frequently ask professor for needed clarifications in class.	N > D	7.42	8.88	160	4.49†
Ask for extensions on assignments when course requirements are difficult to meet.	N > D	5.79	7.23	161	3.51†

Table 3
Continued

		Ratings by Professors of			
Student Behaviors Rated by Professors	Direction of Difference	Disabled Students (D)	Nondisabled Students (N)	*df*	*t*
Fail to seek out special consideration					
Fail to approach the professor about course concerns.	D > N	4.10	2.98	162	2.69**
Fail to ask for needed clarifications during class.	D > N	3.15	2.14	162	2.49*

Note. 10 = very appropriate, 1 = very inappropriate.
$p < .10$ unless otherwise marked
$^{*}p < .05$
$^{**}p < .01$
$^{\dagger}p < .001$

these same professors also believed, overwhelmingly, that it was less appropriate to single out a student for special attention (e.g., speaking to a student about frequent absences when this is contrary to the professor's usual procedure).

DISCUSSION

Disabled Versus Nondisabled Students

The results indicate that, generally, students with disabilities are relatively disinclined to request or to accept special consideration. Because students with disabilities are more likely to need special consideration than are nondisabled students in order to succeed ("ACT Study," 1980; Moore, Newton, & Nye, 1986), it is ironic that the nondisabled students are the ones who believe it more appropriate to request or accept special treatment. In comparisons of disabled students and their able-bodied peers, the direction of the difference was maintained for behaviors generally considered to be appropriate, such as asking for extensions on assignments when course requirements are difficult to meet, as well as for behaviors generally considered inappropriate (e.g., using equipment in class without having consulted the professor). Because disabled students also evaluate special treatment as less appropriate than their professors believe is the case (Fichten et al., 1988), it appears that it is the students with disabilities, rather than their professors, who misperceive the appropriateness of requesting or accepting special considerations.

Why Disabled Students Underestimate the Appropriateness of Special Consideration

Underestimation of the appropriateness of special treatment may be due to lack of knowledge concerning what nondisabled students consider acceptable. Students

Table 4

Comparison of Professors' Appropriateness Ratings: Professor Behaviors

		Ratings by Professors of			
Professor Behaviors Rated by Professors	**Direction of Difference**	**Disabled Students (D)**	**Nondisabled Students (N)**	*df*	*t*
Grant special consideration					
Agree to allow a student to tape lectures.	D > N	8.94	7.56	160	3.31†
Give a student exemptions when course requirements are difficult to meet.	D > N	4.44	3.57	159	1.95
Give student extensions when course requirements are difficult to meet.	N > D	6.28	7.47	161	2.96**
Fail to grant special consideration					
Refuse to lend one's lecture notes to a student.	N > D	4.70	6.90	159	4.23†
Refuse to allow a student to tape lectures.	N > D	2.38	4.34	161	4.04†
Refuse a request for special adjustments when course requirements are difficult to meet.	N > D	3.30	4.49	159	2.64**
Refuse a request for a make-up exam or extra assignments when the student's grade is a failure.	N > D	5.60	6.57	159	1.93
Single out a student for special attention					
Warn a student that the course is very difficult.	N > D	4.69	6.04	167	2.69**
Periodically inform a student about how he/she is doing in the course if this is contrary to the professor's usual procedure.	N > D	4.88	6.21	162	2.51*
Speak to a student about frequent absences when this is contrary to the professor's usual procedure.	N > D	6.46	7.91	162	2.96**
Speak to a student if he/she is not participating in class activities if this is contrary to the professor's usual procedure.	N > D	5.99	7.23	160	2.41*

Table 4
Continued

Professor Behaviors Rated by Professors	Direction of Difference	Ratings by Professors of Disabled Students (D)	Ratings by Professors of Nondisabled Students (N)	*df*	*t*
Tell a student, in private, to ask fewer questions in class.	N > D	2.86	3.66	162	1.87
Talk to a student about problems with inappropriate social behavior.	N > D	7.45	8.12	162	1.65
Ask a student if he/she can hear the professor.	N > D	7.57	8.99	161	3.64†
Frequently ask student to repeat when professor doesn't understand the student because of audibility or accent.	N > D	4.66	7.56	158	6.48†
Frequently ask a student to summarize his/her comments when professor doesn't understand the student because of audibility or accent.	N > D	4.44	6.83	153	5.11†
Frequently ask student to paraphrase when professor doesn't understand the student because of audibility or accent.	N > D	4.49	6.32	154	3.74†
Speak to the class when the student is present concerning encouraging him/her to participate in class activities.	D > N	5.13	3.52	163	2.86**
Avoid dealing directly with a student concerning problems					
Ask someone else to speak to a student if he/she has problems with inappropriate behavior (e.g., continually interrupting others).	D > N	3.14	2.08	160	2.40*

Note. 10 = very appropriate, 1 = very inappropriate.
p < .10 unless otherwise marked
**p* < .05
***p* < .01
†*p* < .001

with disabilities may simply lack normative information about able-bodied students' views. The mistaken belief that being accorded special consideration means that one is not treated as an "equal student" could have important consequences for designing orientation programs for students with disabilities about to enter postsecondary education. Because this is an empirical question, in future research, disabled students' beliefs concerning the appropriateness of special treatment being requested or according to disabled and to nondisabled students should be compared.

Because having an impairment is not positively valued, students with a disability may also feel that special treatment will result in being singled out as different, a "handicapped student" (Newman, 1976). This sensitivity is certainly suggested by the results of this investigation, which show that disabled students believe it is less appropriate than do nondisabled students for professors to single out a student for special attention.

Of course, students with disabilities do not want to succeed simply because of their disability. Thus, they may want to minimize the number of special considerations accorded. While they appear to be unwilling to request changes necessitated by an impairment, they seem to be unwilling to ask for additional considerations deemed appropriate by their nondisabled peers. In the process of ensuring that they are treated "equally," they are insisting on less than normal consideration, in effect making their disability into a handicap. Even the courts have recognized that identical treatment is not necessarily equal treatment and that identical treatment does not constitute nondiscrimination (Calamai, 1985). Instead, equivalent consideration is needed.

What Could Be Done to Help Students

Students with disabilities need to learn that in the attempt to obtain equal treatment from professors they ought to be willing to accept as much as their nondisabled peers. Advisors of disabled students might be made aware of this problem. They could suggest that students with disabilities contact their professors to request course information or a course outline before classes begin. Such action would have two advantages. First, it could serve to assure the student that such considerations are generally acceptable. Second, it would open communication between student and professor on an issue devoid of emotional connotations. This would be especially effective if the student were to use the opportunity to apprise the professor of what action the student plans to take with regard to equipment and services, what teaching and learning considerations and issues are likely to arise because of the disability, and what the professor could do that would be helpful.

Differences Between Professors of Disabled and of Nondisabled Students

Professors of disabled students believed it more appropriate for students to request and to be accorded special considerations such as asking for and being granted permission to audiotape lectures than did professors of nondisabled students. This was true for generally appropriate behaviors such as approaching the professor before the course starts if problems are foreseen as well as for inappropriate behaviors such as frequent lateness for class. When it came to singling out a student for special attention, however, professors showed the opposite trend, with professors of disabled students believing it less appropriate to actively approach a student to discuss progress in the course or to talk about difficulties.

What Could Be Done to Help Professors

Professors appear willing to allow their disabled students to decide when extra considerations are needed. They are also more reluctant to approach a disabled than a nondisabled student concerning course problems and difficulties. In view of disabled students' apparent underestimation of the appropriateness of student-initiated behaviors, this overly sensitive approach by professors may fail to provide equivalent consideration to students with and without disabilities. The tendency to avoid offending students with disabilities by not according them the special attention one would accord to nondisabled students constitutes reverse discrimination. This inaction can have deleterious consequences for students with disabilities, as neither students nor professors are likely to discuss course concerns. Therefore, when preparing college professors to teach students with disabilities, the strategy of discrimination through "avoiding discrimination" should be pinpointed and counteracted.

As one step toward a solution to this problem, student services professionals could advise professors to make a general announcement on the first day of class. This should include information about evaluation, exams, and assignments, tutorial services, professor's office hours and the like, as well as a general statement inviting students to see a professor if they have concerns about the course or if they need special consideration. Again, this would open communication before problems became acute and would serve to assure disabled students that these considerations are acceptable and generally available to all. When approached by a disabled student, whether or not accommodation is possible, the professor should stress his or her availability for discussion on other issues.

CONCLUSIONS

Misperceptions of the appropriateness of special consideration on the part of students with disabilities and the rejection of necessary course adjustments are likely to constitute major and unnecessary impediments to student success. Consistent with recommendations made by others (e.g., Farbman, 1983), the results of this study suggest that when preparing students with disabilities to cope with the demands of postsecondary education, the tendency to "be hard on oneself" by rejecting or failing to seek out needed special treatment from professors should be taken into consideration and targeted for modification. This is an issue that may be addressed while students are in high school or in college orientation programs. These findings also suggest that professors should be made aware of the tendency to be overly "sensitive" to the sensibilities of students with disabilities. Such "sensitivity" can inadvertently result in discrimination by causing professors to fail to approach students with disabilities when course problems and difficulties arise, although they would approach nondisabled students in similar circumstances. Student services professionals may profitably address this issue in workshops for faculty.

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Head Injury Prevalence Among College Students

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ABSTRACT

Students at five universities and colleges in four states were asked to respond to a questionnaire about head injuries. The students were asked to indicate if they had ever had a medically diagnosed head injury or if they had ever been unconscious for more than 20 minutes. Demographic data and the details of the injury or illness were obtained. Of the 1,168 surveys completed, 51 students (4.37%) indicated they had incurred a diagnosed head injury, while 61 students (5.22%) reported having been unconscious for more than 20 minutes.

A review of the literature on college students with head injuries is brief. Little formal information is known about this group, although the number of publications on the topic is increasing. Ozer (1988) recently completed a comprehensive overview of the area and presents a list of available resources on head-injured college students. Much of the material that is available is not of an empirical nature. Descriptions of community college programs are available (Cook, 1987; Cook & Knight, 1987; Cook, Knight & Harrington, 1986; Hackler & Tobis, 1983). Hall and DePompei (1986) presented some of the problems head-injured college students face. Brief discussions of these students were included in articles of a more generic nature by Savage, Cohen, Coyne, Fryer, and Harrington (1985), and by Bauer and Titonis (1987). Holmes (1987) presented a paper on the topic and recently completed a book on head-injured college students (Holmes, 1988).

The lack of empirical data on the head-injured college student has resulted in a dearth of factual information about these students. Data are lacking on incidence, retention, and graduation rates, and unique problems these students may face in college. A few studies have tangentially addressed some of these issues, however. Crovitz (1987) noted that among 1,964 undergraduates who were asked if they had ever been knocked unconscious, 25.1% of the males and 12.2% of the females responded in the affirmative (for an overall 17.7%). Ozer (1988) noted that approximately 2,400 head-injured students had been served in one recent year in the California community college system. Holmes (1989) conducted a survey of personnel at rehabilitation facilities, seeking responses to a number of questions about head-injured college students.

The present study was specifically designed to obtain information on the prevalence of head injury among college students by sampling that population directly. Results should constitute a baseline figure that will serve as a focal point for other research into this area.

METHOD

Subjects

Four hundred and thirty-two males and 736 females completed the survey used in this study, for a total sample of 1,168. A small number (56) of the original 11,224 surveys were discarded because of incomplete information or obviously facetious responses. The sample included 195 freshmen (ages 17-54), 353 sophomores (ages 18-47), 345 juniors (ages 19-63), 255 seniors (ages 20-49), and 20 graduate students (ages 20-50).

Schools in the sample ranged from small religious colleges to large state universities. Although a mix of small and large, private and state-funded schools was sought, the sample was based upon availability of students and institutional interest in participating, not upon any unique factors within the sites.

Nearly 30 different classes were surveyed that ranged from introductory to senior-level, and represented a diverse sampling of academic areas. Examples of the classes include introductory psychology and sociology, criminology, mathematics, religious studies, nursing, counseling, physical sciences, business, economics, physical education, and biology. No preplanned program of courses to sample was employed.

The academic majors of the students ranged from undecided to over 60 different areas. In other words, virtually all types of undergraduate majors were represented in this sample.

Instrument

A two-sided survey was designed, which included descriptive and demographic information (e.g., student's age, sex, grade level, major, overall grade point average [GPA], name of college or university, and class in which the survey was being completed). The question following the demographics was "Have you ever had a medically diagnosed brain injury or disorder?". A medical diagnosis was sought to avoid the possibility of self-diagnosed illnesses. If the answer to this question was "yes", the student was instructed to complete the rest of the front page. If the answer was "no", the student was instructed to turn the page over and respond to the appropriate items.

If the student indicated having had a diagnosed brain problem, spaces were provided to respond to the following:

- Type of injury. (The type of problem, part(s) of the brain involved, and the year of diagnosis was requested.) If more than one injury was sustained, the person was asked to list each separately.
- Medication taken for the injury/disorder.
- Classes that pose special difficulties.
- Ways in which the injury or disorder affects college performance. Problems that may be related to the injury/disorder.

If a student had not had a medically diagnosed head injury or disorder, he or she turned the page and responded to the question, "Have you ever been unconscious (other than from anesthesia) for more than 20 minutes?". This question was included to detect those students who have had an unconscious period of more than a few minutes, but who had not sought medical help. This is important when one notes that Carlsson (1986) found that 20% of his respondents in Sweden had incurred a head injury with loss of consciousness, but had not sought medical attention. This question was an attempt to determine how many students might have an undiagnosed brain injury or disorder. If the student indicated no period of unconsciousness, he or she was asked to list any difficult classes and was then finished. If the student reported a period of unconsciousness of more than 20 minutes, he or she was asked to provide information on the following:

- How many times? (Each occurrence was listed separately.)
- Cause?

- Amount of time unconscious?
- Year of occurrence?

These students were also asked to list any especially difficult classes and to respond to the question, "Did the period(s) of unconsciousness leave any aftereffects? If so, please list them.".

PROCEDURE

Students were asked to voluntarily complete a survey on head injuries during class time. Instructor discretion determined that point during the semester at which the survey was administered. The following instructions were read to the class:

> *This is a survey about brain injuries and illnesses. Your participation is voluntary and your responses will be anonymous. I would appreciate your cooperation in completing this survey. If you have completed this survey in another class, please do not complete another one. If any of the items on the form are not clear, please ask about them.*
>
> *Begin by filling out the top of the front page where you are asked to give information about yourself. As the instructions indicate, if you have had a brain injury or illness you will complete the rest of that page. If you have not had such an injury or illness, you will complete the back of the page. In other words, you will complete only one side of the form after you have given the background information.*
>
> *When you are finished, you may leave the form here.*

Forms were passed out and although no time limit was imposed, most students completed the survey within a few minutes. Less than 10 students chose not to complete the form.

RESULTS

Sample characteristics and a summary of the most pertinent results are presented in Table 1.

TABLE 1

SAMPLE CHARACTERISTICS
AND RESULTS OF HEAD-INJURY SURVEY

	No Injury	Unconscious	Head Injury
Sample Size			
Total	1056	61	51
Male	381	26	25
Female	675	35	26
Freshman	176	11	8
Sophomore	318	21	14
Junior	309	20	16
Senior	235	9	11
Graduate	18	0	2
% of Total Sample			
Male	32.62	2.23	2.14
Female	57.79	3.00	2.23
Combined	90.41	5.22	4.37
% of Own Gender			
Male	88.19	6.02	5.79
Female	91.71	4.76	3.53
Mean Age	21.42	21.50	22.56
SD	5.06	5.62	5.62
Mean GPA	2.93	2.88	2.99
SD	.55	.51	.47

For ease of presentation, results will be presented in three sections, according to absence of injury, a period of unconsciousness, or diagnosed brain injury or disorder.

No Injury/No Unconsciousness

Three hundred eighty-one males and 675 females reported no injury or unconsciousness of 20 minutes or more. Their mean age was 21.42 years (SD = 5.06), while their mean GPA was 2.93 (SD = .55). Over 60 college majors were represented in this group. In terms of difficult classes, two categories dominated: none (n = 410) and some form of mathematics (n = 262). Even with grouping similar classes, over 50 different categories were noted.

These 1,056 students constituted 90. 41% of the total sample. Calculating by gender, 88.19% of the males and 91.71% of the females were free of brain injury and reported no extended period of unconsciousness.

Unconscious for at Least 20 Minutes

Sixty-one students reported an unconscious period of at least 20 minutes (5.22% of the sample). Twenty-six males were in this group (6.02% of all males or 2.23% of the total sample). Thirty-five females were in this group (4.76% of females or 3.00% of the total sample). The mean age for this group (both sexes) was 21.50 years (SD = 5.62). The mean GPA was 2.88 (SD = .51). Thus, this group was not appreciably different in age or GPA when compared to the non-injured group.

Referring to the first (or only) period of unconsciousness, the mean age at the first episode was 14.42 (SD = 5.67), with a range from 3-41 years. The mean years since the episode was 6.89 (SD = 6.62), with a range from 0-37. The amount of time unconscious ranged from 20 minutes to 3 days (4,320 minutes). Before dismissing the 3-day period as unlikely, clinical experience has shown that such an occurrence is possible. If the 4,320 minutes is included, the mean time unconscious was 122.41 minutes (SD = 550.37). Excluding the 4,320-minute episode results in a mean of 51.27 minutes (SD = 65.89). Excluding the next highest time (480 minutes), the mean is 43.87 minutes (SD = 34.55).

Twenty students reported having been unconscious a second time. Five students reported a third episode, while no one reported more than three episodes.

None of the students in this group reported taking medications as a result of their unconscious period. Fifty-one students (83.60% of those who had been unconscious) reported no aftereffects of the episode. Five students (8.20%) reported headaches as an aftereffect, 2 (3.28%) reported reading problems, and one each reported problems of fatigue, weakness, coordination, attention, motivation, vision, and memory.

For difficult classes, 25 students in this group (40.98%) reported mathematics classes to be especially troublesome, whereas 22 reported no difficult classes (36.07%). Five students each (8.20% each) reported history and foreign languages to be especially difficult, thus constituting the second and third rankings. Fifteen other classes were noted, as well.

The 61 students reporting an unconscious period represented 24 different academic majors. There were 11 freshmen, 21 sophomores, 20 juniors, and 9 seniors in this group.

In terms of the causes for the period of unconsciousness, automobile accident and a fall were both noted 12 times each. Alcohol was noted as the cause in nine cases, while a blow to the head was reported six times. Four students reported a football accident as the cause, and four students did not specify a cause. Three students reported a bicycle accident as the cause and two noted a concussion (without elaboration). There was one each of chemical imbalance, snowmobile accident, fever, motorcycle accident, muscle disease, basketball, soccer, wrestling, and hypoglycemia. We realize these could be grouped, but we leave that to the discretion of the reader.

Medically Diagnosed Head Injury/Illness. Fifty-one students reported having had a medically diagnosed brain disorder (4.37% of the total sample). Twenty-five males (5.79% of males or 2.14% of the total sample) and 26 females (3.53% of females or 2.23 of the total sample) were classified into this group. The mean age of the head-injured group was 22.56 years (SD=5.62), while the mean GPA was 2.99 (SD=.47). Thus, age and GPA were not appreciably different than the other two groups.

The mean age at the time of diagnosis was 13.24 years (SD =6.94), with a range of birth to 42 years. The mean number of years post-injury was 9.18 (SD= 8,56), with a range from 0-42 years. Nine subjects reported a second brain injury/disorder. The head-injured group consisted of 8 freshman, 14 sophomores, 16 juniors, 11 seniors and 2 graduate students.

Forty-one of the head-injured group (80.39%) reported taking no medications as a result of the problem. Four students (7.84%) were taking anticonvulsants, four (7.84%) were taking analgesics, two (3.92%) were taking antihypertensive medications, and one was taking a blood-thinning agent. These figures indicate that some students were taking more that one type of medication.

The head-injury group represented 26 different academic majors. For especially difficult classes, 25 of the 51 students (49.02%) reported none were especially difficult. The next highest was mathematics (n = 16, or 31.37%). Sixteen other entries were noted for the most difficult class.

For effects of the injury or illness, 37 of the 51 students (72.55%) reported none. Three (5.88%) noted a memory problem, and two each (3.92% each) reported problems with mathematics, problems with reading, and problems with dizziness (both used the word "spacey"). One each reported problems with medicine side effects, poor grades, attention, learning, writing, comprehension, concentration, stuttering, missed classes, motivation, formal classes, and tasks with time limits.

In terms of causes for the injury or illness, 25 students (49.02%) reported a concussion (of which 20 were not further described; two involved the right temporal region; two involved the occipital region, and one involved the frontal area). Five students (9.80%) reported a seizure disorder (one secondary to an injury); four reported a skull fracture; and two each (3.92% each) reported a fall, blow to the head, and automobile accident as the cause. There was one each of the following (1.96%): blood clot at the base of the brain, drug overdose, encephalopathy, meningitis, left hemisphere stroke, contusion, pituitary tumor, toxin, Tourette's syndrome, surgery, and cerebral palsy.

Clearly, there is overlap between the head-injury groups and the group with unconsciousness where concussion is involved. Certainly, not all medically diagnosed concussions would have serious aftereffects, and not all *undiagnosed* concussions would necessarily be minor. We have no way of sorting this out. The reader may wish to combine these figures in different ways.

Combined Head-Injured and Group with Unconscious Episode. When the groups reporting a diagnosed injury and a period of unconsciousness are combined, the figures for males are 11.81% of all males and 4.37% of the total sample. For females, the corresponding figures are 8.29% of all females and 9.59% of the total sample.

In order to put these figures into some kind of meaningful perspective, information in the U.S. Department of Education's *Digest of Educational Statistics 1988* (1988) is useful. This source indicates the most recent enrollment figure (from 1986) for 4-year colleges to be 7,826,036, of which approximately 4,157,190 are females and 3,668,846 are males.

Using these enrollment figures and figures gathered in the present study, it is possible to offer some gross estimates of the numbers of students involved. It is important to point out that these figures are approximations.

Based on extrapolations from the present survey, nearly 210,00 male college students would have a diagnosed head injury and 220,000 would have been unconscious for 20 or more minutes. Approximately 140,000 females would report a diagnosed injury, and nearly 200,000 would have had an episode of unconsciousness of 20 or more minutes. These estimates were calculated as a percentage of the total sample, approximately 340,000 college students would have a diagnosed head injury and another 400,000 would have been unconscious for 20 or more minutes. Thus, based on these results, it is clear that head injury among college students is far from uncommon.

Discussion

The present results establish a baseline for future studies to use as a comparison figure. Several comments are warranted, with a caveat that broad-ranging conclusions cannot be made because this represents an initial attempt at data collection.

It is reasonable to state that head injury among college students is more than an uncommon occurrence, one that certainly warrants greater attention and investigation. The study, by its sampling plan, did not include students who had dropped out of college. Including these students would increase the figures presented in this survey, but there is no reliable way to determine what those numbers might actually be.

It is surprising to note the number of students with a diagnosed injury or a 20-minute (or longer) unconscious episode who reported no noticeable effects of the injury or episode. These students could have subtle deficits of which they are unaware, or they could be denying clear deficits, but the available information suggests otherwise. The injured/unconscious episode groups represented all college majors, described no unusual pattern of difficult classes, were in a large array of college classes, were at all levels of college, were not significantly older that the other students, and were at the same GPA level as their college peers.

Referring to the group that had been unconscious for 20 or more minutes, it is important to consider how the group relates to the medically diagnosed head-injured group. There is no way to accurately assess the degree of impairment (if any) of this group. It is, however, reasonable to assert that some portion of these students have incurred more than a transient set of symptoms. As Rimel, Giodini, Barth, Boll and Jane (1981) noted, even an unconscious period of 20 minutes or less correlates with months of subtle impairments after the episode (e.g., concentration or memory difficulties). Noting that these survey results showed a mean time of unconsciousness of around 40 minutes, the possibility that some part of the group has a relatively long-term problem is increased.

One survey does not establish a definitive data base, and a great deal of study remains to be done. Four areas of immediate need are worthy of mention. First, the prevalence of head injury among junior college students must be studied in order to obtain a more rounded picture. Second, former students who did not succeed in college should be considered. One can only guess how large (or small) this group might be. Third, there is obvious need for intensive study of the head- injured students to assess strengths, difficulties, subtle deficits, and so on. Finally, there must be replication of the present study.

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speak out

An Argument for Community College Accommodation of Students Who Have Mental Retardation

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ABSTRACT

Although members of other disability groups now have wide access to publicly supported higher education, adults who have mental retardation do not consistently enjoy those same postsecondary opportunities and accommodations. Barriers to access include stricter admissions standards in formerly "open door" institutions, labeling and definition problems, and negative societal attitudes that devalue individuals who have mental retardation. Recommendations are provided that address the educational and access needs of these students, as well as suggestions for program implementation and the provision of equitable services.

INTRODUCTION

At first thought, most people would laugh at a suggestion that mentally retarded people should attend college. Even college professionals who work with, and advocate for, disabled students on a daily basis have difficulty accepting a notion of colleges serving mentally retarded students. Ironically, most mentally retarded people would probably also agree, at least initially, that mentally retarded students have no place in college.

Some of this feeling—that mentally retarded people don't belong in college—originates from our traditional beliefs about what "college" is, even though in reality, colleges, particularly community colleges, have evolved into "open door" institutions that serve many diverse functions and groups. But a larger reason stems from the fact that most people have unquestioned, stereotypical views about mental retardation, and either lack information about, or refuse to recognize, the positive traits and abilities of this very worthy, yet often overlooked, group of people.

Most people tend to identify the term mental retardation with stereotypes of dependency, social inappropriateness, deviance, and intellectual inability, and do not focus at all on the adaptive capabilities of people who have retardation. Arguing that mentally retarded people share many assets that are not commonly acknowledged, Wolfensberger notes that many professionals view mentally retarded people as a class, and share a preoccupation with their deficits, failing to see, or perhaps never having the opportunity to see "the assets of retarded people sufficiently displayed or to act appropriately in light of the many positive and negative realities that such experiences reveal" (1988, p.69). In explanation, he says that "it is hard to acknowledge that a person has certain valued assets and even nobilities when that person belongs to a socially devalued class in whose devaluation one is at least partially participating . . . . human services structures are one of the major means for carrying out destructive societal policies toward the poor and marginal classes" (p.70).

Many writers have suggested the unique role that community colleges could play in offering important transitional and continuing education services to disabled students, paritcularly those who have mental retardation (Bilovsky & Matson, 1974; Brolin & Eliot, 1984; Gillete, 1987; Jones & Moe, 1980; Stark & Karan, 1987). But the noticeable absence of literature concerning adult mentally retarded students amidst an abundance of research publications that focus on the college accommodation of students from all other disability groups reflects the fact that mentally retarded persons are members of a disabled student population that receives little serious attention, and at best, inconsistent access to postsecondary educational opportunities and accommodations. Three national data sources are particularly revealing: a national random sample of 150 colleges found that only 3% (2 out of 67 colleges that responded) served developmentally disabled students (Michael, 1985); another random sample of 200 community colleges (McAfee & Sheeler, 1987), found that less than half (37.5%, n=51) of the 136 respondents served mentally retarded students; additionally, a recently compiled national directory (AACAC, 1988) found that of 650 respondents (from an original mailing to each of the 1,224 community and junior colleges in the nation), 98% (N=640) reported that they served disabled students, but of those, only 51% (N=327) reported that they served developmentally disabled (including mentally retarded) students.

DEFINITION PROBLEMS

One difficulty with understanding and forming attitudes about mentally retarded individuals is their very wide range of ability levels and disabilities. Those who have severe and profound retardation are generally very handicapped in their ability to fully participate in and contribute to their communities; college participation for these individuals is made possible only by the provision of special programs that focus on specific functional skill development. Those with mild retardation, on the other hand, have the ability to escape the label and to lead very independent lives (Browder, 1985, p. 77).

The Diagnostic and Statistical Manual of Mental Disorders, in accordance with the terminology and classification of the American Association of Mental Retardation, defines mental retardation as "significantly subaverage general intellectual functioning resulting in, or associated with, deficits or impairments in adaptive behavior, with onset before the age of 18" (American Psychiatric Association, 1980, p. 40). Significant subaverage intellectual functioning is defined as an IQ of 70 or below on an individually administered IQ test. Adaptive behavior refers to the effectiveness with which an individual meets the standards of personal independence and social responsibility expected of his or her age and cultural group. It is therefore possible that a diagnosis of mental retardation would not be given to an individual who has an IQ below 70, but who has no impairment in adaptive behavior (p.37).

Four mental retardation "subtypes" reflect degrees of intellectual impairment: individuals classified as mildly mentally retarded have IQs in the range of 70-50; individuals who are moderately mentally retarded have IQs in the range of 49-35; severe mental retardation is in the IQ ranges of 34-20; the profound range comprises IQs below 20 (p.39).

Individuals functioning in the IQ ranges of 100 to 85 are considered to be in "normal" intelligence ranges, while individuals who have IQs less than 71 are considered to be mentally retarded. The reader will note that there is a "borderline intellectual functioning" category in the IQ range of 71 to 84, which is *not* considered by the APA to be mental retardation (p. 40). Many of these borderline individuals will, however, receive a label of "mental retardation" by the colleges when they are disqualified from receiving services in learning disability programs because their IQs and general achievement are not in the average range.

This particular population has recently become focused in California as an "emerging" disability group because the implementation of new state learning disabilities eligibility criteria (Noble, 1989). Some students who were diagnosed as being learning disabled in the high schools, and others who would have previously received services through college learning disabilities programs find that they no longer qualify. Although their needs and goals (e.g., credit classes) more closely approximate those of the learning disabled, there have been instances of their being denied services and "allowed the dignity of failing" in the regular college curriculum; they are also increasingly being inappropriately referred to traditional special programs for the mentally retarded.

Several researchers have noted that there are probably many students with mild retardation (IQs in the range of 50 to 70) attending community colleges whose disabilities have not been acknowledged by college officials (Jones & Moe, 1980; McAfee & Sheeler, 1987). Indeed, coordinators of community college disabled student programs can identify isolated instances of students with mild retardation, who, when receiving the same types of accommodation afforded other disabled students, have succeeded in traditional community college academic programs.

Most adults who have mental retardation, however, are not seeking college degrees. They aspire to attend college for the same reasons as do person without disabilities: many have continuing education goals that include acquiring functional skills that will enable them to become more independent in their daily lives, or in gaining skills and training that will enhance their ability to participate more fully in the competitive job market. Many seek to attend college because of a special interest, or simply because it is something that other adults do, particularly those who are young adults.

HIGHER EDUCATION: ACCOMMODATION OF ADULTS WHO HAVE MENTAL RETARDATION—REVIEW OF THE LITERATURE

Literature concerning college-level accommodation of all other disability groups abounds, although studies concerning persons with mental retardation in higher education are very few in number. In fact, the mental retardation student population is usually overlooked, sometimes intentionally. For example, a 1985 Cooperative Institutional Research Programs survey of 300,000 entering full-time, first-time college freshmen from a national sample of 546 institutions of higher education found that 7.4% of the nation's college freshmen had a disability, a participation rate that they concluded compared favorably with the 8.5% expected in the universe of higher education students who would "report handicaps if full equity were in evidence" (Hippolitus, 1986). Using Census Bureau data taken in 1982, which estimated that 10.4% of the American population has a disability, Hippolitus had adjusted his expected incidence of participation by persons with disabilities in higher education by subtracting "those disability groups which might not be expected to pursue a higher education (i.e., mental retardation)" (p.2).

An extensive literature review regarding the integration of disabled students in higher education also omitted reference to mentally retarded persons (Jarrow, 1987). In a personal conversation, the author explained that the omission of mentally retarded persons in her review reflects the fact that there is little literature on this disability group because mentally retarded persons are not commonly associated with higher education (Jarrow, J., Personal communication, September, 1988). In her article, Jarrow notes the literature reflects progress that has been made in the last 10 years and that "the issues inherent in the successful integration of individuals with disabilities into higher education are still being defined" (p.39).

For the preparation of this article, a computerized literature search was conducted using the following search topics: mental retardation, developmental disabilities, adult students, higher education, postsecondary education, community colleges. Of the 174 studies cited in the search, only 33 (18%) articles directly addressed postsecondary education needs of adults who have mental retardation. Of those, only 19 (9%) articles described specific programs for these students. The remaining articles dealt with professional issues or the development of persons who work with mentally retarded individuals (35% of the total articles), direct program applications (e.g., curriculum guides, 23%) and attitudes toward the retarded (10%).

Some of the articles that describe special college programs for students who have mental retardation are: the College for Living in Denver, Colorado, which provides a variety of special classes using volunteer teachers (Kreps & Black, 1978); food service and janitorial-housekeeping training at The Community College of Allegheny County in Pennsylvania (Daily, 1982); a job club and vocational training at Chicago City-Wide College (Faddis & Long, 1987); restaurant and utility-maintenance skills training at University of Washington (Moss, 1980); the Providing Options for Neglected Adults program at Honolulu Community College, which prepares students for employment outside of sheltered workshops (Wood, Meyer, & Grady, 1977); Basic Skills for Independent Living at the Brockport branch of the State University of New York (Corcoran, 1979); culinary arts food service training at the University of Utah in Salt Lake City (Hall, 1984). Other related articles or publications that were not cited in the ERIC search include: independent skills training for non-English speaking adults who have severe disabilities at the University of Texas (Duran, 1986); clerical training (Baxter, 1972); a paraprofessional training program for mildly retarded persons to become instructional aides (Siders & Rachal, 1985); HEATH and related publications that describe specific programs throughout the nation (Caparosa, 1985a; Caparosa, 1985b; Davie, 1987).

Three studies that critically addressed issues or gathered data regarding college accommodation of students who have retardation will be discussed in this article. The earliest argues that not only borderline or mildly mentally retarded people should attend college, but "profoundly mentally retarded adults" who "need vocational, prevocational, leisure-time, and other forms of educational programs: there is no inherent reason why such programs cannot be provided by postsecondary educational institutions" (Jones & Moe, 1980, p. 59). Jones and Moe cite results of a 1976 survey of 3,038 institutions that found that out of 500 respondents, only one college served students who had mental retardation (Gollay, 1977, in Jones & Moe, 1980). Whereas Jones and Moe felt this statistic understated actual prevalence, the data is generally supported by 1976 U.S. Census Bureau data that indicated that fewer than 3,000 retarded persons were in college programs across the nation in 1976 (McAfee & Sheeler, 1987). Jones and Moe were aware of many colleges that had been open, even eager, to satisfy requests for making college accessible to retarded adults, but stated that "some college vocational instructors have opposed training mentally retarded adults on the grounds that 'they won't be hired anyway' and some adult education directors have not funded programs for mentally retarded students 'because they are not the most efficient use of our limited money'" (p.62).

More recently, a national random sample of 150 colleges found that only 3% (2 out of the 67 colleges that responded) served developmentally disabled students (Michael, 1985). In speaking about the disabled population in general, Michael concludes that "the development of effective higher education service programs for this population is just beginning" and suggests that "the collegiate experience for handicapped students can be improved" by colleges that develop services that are responsive to the needs of their population (p. 40).

In a random sample of 200 community colleges (McAfee & Sheeler, 1987) it was found that 100 of the 136 (73.5%) respondents believed that community colleges have a legitimate role in delivering education services to persons who are mentally retarded, but that less than half of the respondents (37.5%, n=51) actually served mentally retarded students. Although the percentage range of mentally retarded students at those colleges was .06 to 15, 25% of the respondents indicated that less than 1% of their student population was mentally retarded. Of total respondents, 7% indicated that they served them, but couldn't say how many they served, and 13% couldn't state whether there were mentally retarded students among their student bodies. The most common types of services were counseling (51.5%), tutoring (44%), and Adult Basic Education (32%); the least common services was special consideration in regular credit courses (14.7%); 24% had no services for these students. Special consideration in regular credit courses was the least common service offered (at only 15% of the colleges). "Funding limitations and worries about supplanting traditional services were mentioned frequently as restraints to fulfilling the roles they had adopted" in serving persons with mental retardation (p.262). Respondents who did not believe there was an appropriate role for community colleges in the education of students who are mentally retarded provided the following reasons:

- Colleges are not responsible for providing services for individuals who are incapable of learning at the college level.
- Other agencies are better equipped/trained to provide the services.
- Limited resources prevent development of services.

HIGHER EDUCATION FOR PEOPLE WITH DISABILITIES

Colleges provide services and programs for disabled students under authority of Section 504 of the Rehabilitation Act, which provides that "No otherwise qualified handicapped individual in the United States . . . shall, solely by reason of his handicap be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any programs of activity receiving Federal financial assistance." Because they are recipients of Federal financial assistance, public higher education institutions have made conscious efforts at reducing attitudinal and physical barriers for "qualified" disabled students, but attitudinal barriers still limit access and accommodation for adults who have mental retardation.

Ever greater numbers of disabled students have accessed postsecondary education through the provision of special funding that enables colleges to provide extra services and accommodations. Although receiving the label of "handicapped" is generally a guarantee of access and accommodation, receiving the label of "mental retardation" unfortunately does not guarantee extra services, nor, at times, access. Some colleges simply will not serve retarded persons, and of those that do, access and accommodation for persons with mental retardation is not the same as that afforded students from other disability groups.

In her history of contemporary American education, Ravitch (1983) notes that in order to gain educational access or redress, most minority groups have bypassed "educational authorities by working directly with sympathetic congressional committees and by gaining judicial supervision . . . . each victory led to the imposition of mandates on school and university officials, requiring them to do promptly what they otherwise would have done slowly, reluctantly, or not at all" (p. 311). Whereas some writers (Jones & Moe, 1980; McAfee & Sheeler, 1987) and professionals in the field are beginning to suggest that litigation is needed to secure the higher education access rights of individuals who have mental retardation, Reynolds points out that the full acceptance of all disabled individuals into all areas of civic life must involve "less recourse to judicial subtlety and more appeals to the community's sense of moral fitness. . . . progress based on anything other than a broad and stable sense of moral duty is progress resting on sands" (1986, p. 98).

Transition

In 1984, the U.S. Department of Education, Office of Special Education and Rehabilitation Services (OSERS) developed a model to support the transition from school to community of youth with disabilities as a national priority. This transition model was designed in response to data that showed that between 50-80% of working age adults who reported a disability were jobless, and that a high percentage of those disabled adults who did have jobs often experienced low wages and segregation from their nondisabled peers. Further, it was found that approximately 8% of the gross national product was being spent each year in disability programs, with most of that amount going to programs that support dependence (Ianacone & Stodden, 1987, p.2).

Transition is defined as: "a period that includes high school, the point of graduation, additional postsecondary education or adult services, and the initial years of employment." It is "a process that requires sound preparation in the secondary school, adequate support at the point of school leaving . . . an effort that emphasizes shared responsibility of all involved parties for transition success" (Ianacone & Stodden, 1987, p.3). It is expected that transition services will be the major focus of school programs for the next 15 years (Stark & Karan, 1987, p. 102).

Supported with funds and a federal initiative, transition training is under way at the secondary school level, but higher education has remained largely uninvolved. "Our systems of higher education need to better anticipate future training needs, but unfortunately, institutions of higher education have generally failed to provide the training necessary to develop and improve higher community systems" (Stark & Karan, 1987, p. 102).

Serving Nontraditional Students

Community colleges have long had an "open door" mission. However, as budgets tighten and although critics call for a strengthening of academic standards, many colleges will respond by partially closing the door with a corresponding change in mission. In September, 1988, California community colleges received direction from the state legislature (AB 1725), which clearly defined the primary mission of community colleges as that of preparing students for vocations or for transfer to 4-year colleges. Along with this more narrow focus, the colleges are phasing in state-mandated matriculation that requires students to identify a major and to demonstrate proficiency in math and English before they can take certain college classes. Unless specific precautions are taken, many students who have borderline intellectual functioning or mild mental retardation could be relegated to remedial classes and never get a chance to mainstream themselves in other courses or to have access to vocational certificate programs available to others. It could also mean that the former community college mission of developing and offering courses to serve local community needs, such as special classes for citizens who have severe mental retardation, will take an even more subordinate status.

A familiar topic of discussion among community colleges today is the goal of maintaining excellence and access; the literature abounds with arguments that it can be achieved through comprehensive assessment of student skills and subsequent prescriptive developmental programming. Many worry, however, that there is a tendency for colleges to "be preoccupied with the problem and to forget about the people involved" (Platt, 1986, P. 21-23). "It is easy to call for tightening standards and educating only the academically capable, but what do we do with the others? We can't wish them away. They are with us, and their numbers are substantial. They too, deserve an opportunity to grow, to learn, and to be productive members of society" (Barringer, 1982, p. 56).

"Special" Education and Paradigm Shifts

Many colleges that specifically accommodate mentally retarded individuals do so through the provision of special, self-contained classes (Baker & Ostertag, 1986). The special class is a convenient delivery model for the institution and can even be self-supporting through the generation of funding for credit or noncredit average daily attendance (ADA). Special programs and special classes clearly do support the community and provide a very important vehicle for citizens who have retardation to access publicly supported postsecondary education.

A number of educators in the secondary schools are beginning, however, to question whether the segregated special class is even an appropriate or effective method of education for our handicapped youth, and their concerns should be addressed by the community colleges as well. Some are even going as far as to suggest the need for radical changes in the way we view special education overall.

Based upon the writings of Thomas Kuhn (1970) regarding paradigm shifts in the natural sciences, many proponents are suggesting a "paradigm shift" is under way in special education. A paradigm is an overall orientation or philosophy for the ways in which researchers, scientists, and educators form and test theories. In the paradigm under which we currently operate, we form and test theories based upon a reductionistic orientation—we study observed phenomenon, ideas, concepts, or skills by breaking them down into smaller and smaller parts in order to attempt to understand the whole.

Poplin argues that the four major special education models (the medical model of the 1950's, the 1960's psychological process model, the behavioral model of the 1970's, and the current cognitive learning strategies model of the 1980's) each have "different specific assumptions regarding the etiology, diagnosis, assessment, instruction, and goal of education" but that "their fundamental values and beliefs about learning are identical in that they each define, assess, and instruct students in a reductionistic manner" (1988a, p. 388-389). She says that the methods we currently apply in special education are all examples of "erroneously believing that a complex whole such as human learning or learning problems can be broken into its component parts . . . in order to design more effective practice in assessment and instruction" (p. 394).

Special classes are a case in point. Poplin notes that each of the previous special education models relied heavily on diagnosis. "Because diagnosis is primary to special class placement . . . and because diagnosis drives instruction, the instructional methodology in each model becomes almost exclusively deficit driven. Whatever is *found wrong* with the student or whatever the student hasn't learned becomes the focus for special instruction. Our job as teachers is quite obviously to remediate the learning disability; this is in contrast to other areas of special education, such as visual handicap, in which remediating the vision problem is not the goal of educators. But students labeled as having learning disabilities must spend at least twice as much time as their non-disabled peers on what they do not do well" (1988a, p. 396).

While some students with retardation may have serious goals to improve certain skills deficits, it is not appropriate to assume that skills remediation is appropriate for all students who have mental retardation. Some who experienced educational failure as children may wish to specifically avoid the academic as adults, focusing instead on performance-based subjects such as music, art, or athletics. Some may wish to acquire a specific job skill, information about new interests, or simply to learn something new about the world in which they live.

Another problem with special classes is that they don't necessarily address the needs and interests of individual students. Although the titles of many special classes may address functional life goals ("Independent Living" "Cooking," etc.), it is seldom possible for one special class to accommodate the wide range of preparation, ability, disability, needs, and interests of students who have mental retardation. Even though special classes are required to individualize instruction, Poplin feels that "individualized" instruction is "a myth, for the only things that are generally individulalized are different starting points on the same continuum" (1988a, p. 397).

Another criticism of special classes is that they are most often self-contained and held "off campus" (in a study of California community colleges Baker & Ostertag found a 4-1 ratio of off-campus developmental disabilities programming, (1980, p. 1). This off-campus approach has the effect of segregating students who have mental retardation from their non-handicapped peers, and it defeats what could be one of the most beneficial aspects of attending college for students who have retardation: interacting with non-handicapped peers and learning appropriate social skills in a culturally normal environment. It also prevents non-handicapped students, faculty, and staff from learning about, and forming first-hand attitudes about retarded individuals.

Few colleges, including those which offer special classes, have considered how mentally retarded students could be accommodated in the regular curriculum to meet their individual learning goals. Some mentally retardeded students may succeed in the regular college curriculum when afforded the opportunity of receiving the same kinds of services that are available to other handicapped students (alternate test formats, tutors, taped texts, etc.); others may be able to realize their personal learner goals (which may differ from goals of non-handicapped peers or from learner goals as stated on the course outline) in the regular curriculum by receiving only minor accommodations (liason service with instructors, Individual Learning Contract, etc.)

Poplin proposes that instruction should be seen through the eyes of the students rather than through preferred methodologies, mandated curricula, and student assessments and diagnoses" (1988b, p. 401). She suggests a need for changes "in the very definition of learning . . . that beg consideration in designing classroom instruction" (1988b, p. 401).

CONCLUSION

Critics will argue that community colleges have no obligation to serve the mentally retarded. They will point out that the potential inappropriate behavior of mentally retarded students can interrupt classes, and that their presence on campus will make a mockery of the atmosphere and values of higher education. They will assert that the retarded cannot compete in the regular curriculum, and that they should not occupy the places of those who can. They will conclude that already limited resources should be focused on those disabled students who are the most capable, justifying the establishment of a "disability hierarchy" in which people with certain disabilities have more value than others. But their ideas about knowledge, learning, and even disability, are limited to what, and how, they know under an outdated paradigm.

I submit that now is the time for all professionals in the field to reexamine their own attitudes, to acknowledge the unique abilities and strengths of each disabled student, and to support all disabled students who have postsecondary educational needs. I offer the following recommendations for achieving that ideal.

Recommendations

1. Recognize that all individuals, including those who have mental retardation, borderline intellectual functioning, and other disabilities, need respect, encouragement, and the opportunity to grow.

2. Focus on the ability rather than the disability of individuals who have mental retardation or other disabilities. Avoid stereotyping and don't underestimate the academic, independent functioning, or employment potential of students who have mental retardation.

3. Recognize that the mental retardation population is composed of individuals who have a very wide range of ability levels and disabilities. Those who have severe and profound retardation are generally very handicapped in their ability to live independently. Many of the mildly retarded, on the other hand, can escape the label and live very independently. Recognize that even within "mental retardation subgroups" individual's needs may vary. For example, some students who have mild retardation may want to take credit courses while others may simply want to learn a specific functional skill.

4. Provide equitable services to all disabled learners, including those who have mental retardation or borderline intellectual functioning. All disabled learners, including those who have mental retardation, face barriers, whether environmental or attitudinal. Students with hidden disabilities such as mental retardation might require environmental and methodological changes for learning to occur. Provide whatever accommodations are needed to compensate for the student's functional limitations, for example, extra time to finish assignments or to take tests, remediation in math or reading, tutor assistance, or even taped texts. Remember that accommodation, as in the case of other disabilities such as visual impairment, is not intended to remediate the actual disability. Provide reasonable accommodations in vocational testing of students who have mental retardation to be sure their abilities are fairly tested.

5. Provide realistic counseling to students who have mental retardation in order to assist them in making sound education and vocational choices. Encourage them to assess their interests, aptitudes, abilities, skills and achievement, then together decide ways their education or job choices might be accessed through accommodation and training (see Hartman, 1986).

6. Recognize that all people have lifelong learning needs and that those who have mental retardation may be even more in need of lifelong learning because of their special learning problems or skills deficits, or because they may not have had daily opportunities to practice skills they once learned. Recognize that individuals who are retarded have talents, interests, and motivations that will guide and enhance their learning.

7. Establish a campus and community accessibility planning committee with representatives from community groups such as state vocational rehabilitation, Mayor's or Governor's Committee on Employment of the Handicapped, local major employers, community service groups and local organizations of and for disabled persons, local school district representatives, and college faculty, staff, and administrators (Foreman & Hartman, 1985). Wide participation of campus and community experts will increase understanding, serving to avoid duplicative efforts; also creative or alternative financing or accommodations can often be provided through existing channels.

8. New programs should be combined with existing resources and services to develop innovative and creative solutions to the identified needs of students who have mental retardation. Some student's educational goals can be accommodated in the college basic skills or remediation centers with

only minor modifications in materials and teaching/learning strategies. Some may succeed in vocational programs or other credit courses with assistance and accomodations which are currently available to other disabled learners. Some students with retardation may be unable to compete in regular college credit courses as they were intended, but if they have a personal interest in certain courses, they nonetheless could benefit from participation, either by auditing, or through the development of individual education plans, in those classes (e.g., art, physical education).

9. For students who are unable (due to severity of disability) or disinterested in taking the regular college curriculum, provide special classes which address skill building in independent living skills, such as vocational, life skills, or leisure areas. These classes may generate non-credit ADA and therefore be self-supporting. Establish effective, high quality programs in which students can make measurable progress.

10. Offer special classes and programs on campus, as opposed to off-campus, in order to avoid segregation and to promote normalization in cultural- and age-appropriate environments. Get the support of the campus community by educating them about the goals of the program. Stress age-appropriate behaviors of all special-class students and enforce college codes of conduct.

11. Promote local policies and legislation that enable postsecondary institutions to serve students who have mental retardation and borderline intellectual functioning.

12. Colleges that can't or won't serve an individual who has mental retardation should be prepared to provide appropriate, usable referrals, and if needed, offer assistance in making contacts.

13. Recognize that your own attitudinal barriers may limit the ability of individuals who have retardation to participate in postsecondary education.

14. Establish procedures and provide services not because the law does, or does not require them, but because they are socially, and morally the right thing to do.

15. Recognize that "ways of seeing" are also "ways of not seeing." Thinking about phenomena such as education or handicaps in different ways leads to different definitions of those phenomena.

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The Effect of Word Processing on a Dyslexic Artist's Composition

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ABSTRACT

The following is an intensive study of an art major's struggle with dyslexia and how using a word processor helped him surmount his disability. We began working with him as a freshman English student and continued to help him as he began to write in his major field. Whereas earlier handwritten drafts and drills were frustrating, the word processor was the breakthrough. Once the student became confortable with the computer, he was able to internalize what the software and the tutors had taught him. He actually began to enjoy writing, bought his own computer, and showed tremendous improvement in spelling, punctuation, sentence variety, organization, and other stylistic details. His passion for arrangment and the importance of composition as an artist carried over well into his writing. The most apparent conclusion to be drawn from this study is that intensive tutoring by persons trained to understand the nature of LD problems, along with up-to-date equipment, can make an impressive difference in the academic experiences of dyslexic students. It also seems clear that a student with talent and capability should not be deprived of a college education because of a handicap.

Since its inception,10 years ago, the Harbert Writing Center has become much more than a place where freshmen come for remedies to their comma splices and dangling modifiers. With the advent of the "Writing Across the Curriculum Program" at the University of Montevallo, the Center has come to serve student writers from every discipline. In additon, we have been trying to adapt our services as needed to meet the needs of an increasing number of students with disabilities. At Montevallo, many of the students with disabilites happen to have learning disablities. Our legal obligation to serve all qualified students, coupled with the fact that so much of what is known about learning disabilities has only recently been discovered, has created a new challenge and opportunities for the Harbert Writing Center.

In fact, for the last few summers, we have been very interested in he analysis of our attendance reports. More and more basic writers have been taking preparatory English in the summer — and many of the students in this class are LD, some of whom have been identified and others who have not. We feel that the sort of individualized program that the writing center provides is a necessary supplement for students with learning disabilities who have problems writing academically. During the first summer session of 1988, we saw a total of 61 students for 309 contact hours; and 6 of them identifed themselves as LD. Though they represent only 9.8 percent of the total clientele, they worked twice as many hours, utilizing 21 percent of the total hours of turoring service. We rely on students and/or their teachers to tell us about special needs; therefore, the percentage of students that we have identified as learning-disabled is often somewhat misleading because of unreported problems or undiagnosed disabilities.

Like many writing center directors and tutors, we have had no formal training in teaching students with learning disabilities. Five years ago our understanding of the problem was very limited. With limited funds and staff, but fierce determination, we feel we have learned a lesson worthy of reporting. Our intent in this paper is not to claim expertise in learning disabilities and/or computers, but to share with other writing teachers one student's struggle with dyslexia and our attempts to help him. Though he has given us permission to publish this report and to use his full name, we still simply refer to him as Stu. Stu has been instrumental in making us more aware of our needs and helping us overcome some mistaken ideas about the abilities of students with learning disabilities.

Stu first came to the Harbert Writing Center during the second semester of his freshman year. He was referred to us by his English 101 teacher because he was failing the course. Through the usual conference with his instructor, we learned that Stu was having such problems with his writing assignments that, out of necessity, he finally informed her that he was dyslexic. The news came as quite a surprise to her, and she asked him why he had not told her at the beginning of the semester. We were even more surprised when we learned that he had already taken English 101 the previous semester with another instructor and and failed it. He never told that instructor about his dyslexia, though she is one of our finest teachers and would have been wiling to work with him individually. Again, we asked "Why?"

Stu explained that he did not want to be called handicapped and most certainly did not want to be treated differently in a classroom. He and many like him would risk failing rather than put themselves in a position of being odd or different, or being objects of pity. We're indebted to Stu for telling us that, and as we learned more about this sophisticated young man, we found that we had just begun to discover how much he could teach us.

Five years ago, when Stu first came to the Writing Center, it was obvious that he did not have much faith in our ability to help him, and we sensed that his expectations were for us to fix his errors and leave him alone. He was pleasant and polite, but his attention span was very short. This baffled some of the tutors who did not know how to work with him because he seemed so inattentive; the frustration level was high, and he was initially defensive. In fact, he intimidated some of the tutors with his confident, almost belligerent attitude.

Nevertheless, we knew we had to figure out how we could most effectively work with him, so we began trying some things we had heard about. First, because Stu was an art major, we tried to appeal to his dominant right hemisphere and help him learn to spell through kinesthetic exercises. We wrote his spelling words in big colorful letters on large sheets of paper and had him trace over them with his finger. He was impatient. He told us later in a taped interview that those exercises, though they might appeal to some students, had been a total waste of time — they simply had not helped him at all. Indeed, that should have been evident to us because his spelling was not improving. We encouraged him to use the dictionary more; although every time we suggested it, he looked as if he might cry. It took a professional workshop from the Alabama Council of Teachers of English conducted by Tom Brennan, a professor at the University of South Alabama, to make us aware of something that should have been so apparent to us. Brennan explained how useless a dictionary could be to someone with dyslexia because many of the words might look reversed. Later, in the interview, Stu told us that asking him to use the dictionary was the worst possible thing we could have done because words were what he feared the most. When he looked in the dictionary, he only saw pages of letters that, to him, looked all the same — particularly when he grew tired when working on a long assignment. It was very difficult for us to empathize with him.

Nevertheless, we tried and somehow got through that semester. We feel we helped him somewhat — he did pass English 101 with a C average. However, our warning was clear: this young man needed more help than we, at that time, were able to give, and we knew we were morally obligated to learn all we could to help him.

The next semester found us still trying to match Stu with a suitable tutor. We felt relieved when our only male tutor, a creative individualist who admired Stu's thinking and enjoyed his insights, took over the task as Stu's primary tutor. Also, our graduate tutor loved talking art with Stu because she had been an art major as an undergraduate. This "chemistry" worked so well that we tested them with the Myers-Briggs Type Indicator and discovered they both had similar personalities and work styles; in addition, she could share his enthusiasm for his major and his approach to projects involving writing.

We were more confident now and more relaxed with Stu. In fact, we were growing to like and respect him tremendously the better we became acquainted. Consequently, our job seemed easier although Stu was still struggling with writing assigments in his Enlgish class, and now, in an art history class. We had to do more. We began reading any material we could find on the subject for answers, and it seemed obvious that giving Stu access to the writing center's only computer was the best solution.

A look at the current literature, with its predictions about students and computers in general, reminds us that what is true for the average student may be much more true for the student with dyslexia. According to Lynne Veach Sadler, students who would be very much turned off with CAI (Computer Assisted Instruction) might be more than enthusiastic about CAC (Computer Assisted Composition). This was truly the case when we introduced Stu to cute, gimmicky spelling programs with gremlins, etc. He was amused for a short time, but he ultimately felt that they were a drain on his time. However, when he discovered a spellchecker, it was like a miracle. No longer did we have to do the drudgery of trying to "draw on the right brain." A whole new world of learning and teaching opened up to us. Stu learned to use the computer as a tool for writing. Now with the computer and tutors to assist, the whole writing process was becoming much clearer to Stu. He would type his paper on the word processor, then use the spellchecker to catch his mispelled words. We taught the phonics he had in grade school and now, without frustration, it all began to make sense. We explained short and long vowel sounds, hard and soft consonants and silent e's. Instead of depending on the awesome dictionary, Stu could now sound out a word and "ask" the computer if it was correct. He could then fix the misspelled words and print another draft, whereas before, in recopying drafts, he would make new errors.

Using the word processor and spell checker for three different papers of equal length, we found that on the first one Stu had misspelled 120 words, on the second — 62 words and on the third — only 27 words. He estimated that he saved approximately 75% of his writing time working with the computer as opposed to writing each draft by hand.

Being able to print a neat, clean copy as an added incentive. As John Bean has pointed out, a student who has never been accustomed to neat, clean copy will surely have a much better attitude toward an attractive copy, and this was especially true of Stu, the art major.

Now Stu has reached a point where he can do some major revising of his papers. We pointed out to him that Carol Holder, a recent consultant at our school from California State Polytechnic University at Pomona, has observed that basic writers view revision as filling commas and changing a few words while superior writers write the first time to see what they want to say. Revison means more to them than fixing errors. They are more likely to move whole sentences or "chunks" of their work. The computer makes this kind of revision so much easier, and Stu is doing much more sophisticated revision each time he writes now.

Not only has Stu gained confidence in his ability as a writer, but he has also excelled as an artist. He was able to compose, correct, print, and send out his own letter to an art gallery asking for an opportunity to submit some of his prints for a photography show. At last he can come to us with his own work, first written by hand, then typed and spellchecked so that we can operate with him on the level that we work with others who are not disabled. At last, he can shake loose the shackles and ask questions about style, word order, and so forth, and the mind that was always there can speak about the great works of art that he loves. That love, as well as his innate talent, won him the Outstanding Art Major Award in his senior year. He is now able to write at the operational level of those students who are not learning disabled. He talks with ease about the importance of manipulating and arranging his writing the way he does his art. Certainly, it would have been an injustice to deny Stu the opportunity to receive a college education because of his verbal problems when he can distinguish himself in such a way.

The time we have spent with Stu has been most rewarding. We watched the tutor/tutee/computer relationship become a threesome, with the computer becoming the catalyst. As Farell has reported, it works to the tutee's advantage to sit facing the monitor while being asked questions about a text. Stu eagerly assumed the role of "person in charge" with a tutor guiding him carefully, just to the left of the monitor, helping lead him to a world of mystery where words can be used to discuss great works of art.

It seems as if Stu has, in fact, reversed the role and become our guide. He has been the ideal student to help us define more clearly the role of the writing center. We have had to put basic writer generalizations aside and learn to cope with extremely sensitive, intelligent students who have learning disabilities. We have had to investigate the literature concerning new technological advances that can be of immense value to students with various disabilities. We have had the opportunity to work with a student from Stu's confused state as a student in freshman English all the way through to his senior year as an art major, incorporating all that we have learned about writing across the curriculum as well. He started with simple, choppy sentences and moved to complex sentences which eventually included verbal modifiers and more and more sophisticated language usage. It is, indeed, a pleasure to watch an alert mind flow from such essays as "Why I Chose this College" to interpretations of Yeats' "Sailing to Byzantium" to an explication of St. Lucy's Altar Piece. It is our hope that the next young person with similar needs will step into a much more knowledgeable milieu.

However, this kind of improvement can continue only if our universities are committed to providing adequate staffing for such students. For every positive story like Stu's, there must be a number of students who get lost in the adjustment to college life. Working with LD students can be very demanding and often requires the maturity and knowledge of a masters-level tutor. Though our volunteer peer tutors can be of some help, the need for more advanced assistance is clear. In fact, the woman who helped Stu with his art papers was paid by small donations from former tutors who feel committed themselves to the writing center and its future and would also like to see the university reflect a commitment to students with special needs.

Though the scope of this paper has far been the needs of students with learning disabilities, we must remember that they are but a fraction of the student population needing the writing center's services. As concerned professionals, we must demand that students with disabilities receive the assistance they need. At the same time, we must be realistic when we view the priorities of the entire academy and look for cost-effective ways to meet those special needs. For example, a mature tutor whose primary responsibility is to work with LD students could also be available to serve students from the entire university community in writing reinforcement courses. Also, special equipment for computer use could be housed in a facility that is open to all students. In short, we must find ways to help our students by working with the resources that are already established whenever possible.

EPILOGUE

Several months have passed since the first version of this paper was written. This is Stu's last semester, and he has come in for help with the poster for his senior exhibit, which he, of course, wanted to be perfect. He also has worked on essays for art history and a course in theatre. Interestingly, the last paper we helped him with focused on Laura in The Glass Menagerie. (How might that character's fate have been changed had she been provided special assistance?) Just last week we worked with Stu on a short assignment, and we were amazed at his progress. He now has his own computer and he has "internalized the spellchecker." He can spot most of his spelling problems himself and correct them, though he still enjoys the reassurance of a tutor sitting there to verify his corrections. His attention to style is fervent: he makes remarks like, "Yes, a colon — that has just the power I wanted in that spot!" or "I know I need a break here, but is a comma strong enough?" We seem to have "worked ourselves out of a job" just in time for his graduation. He is still having some problems with spelling words that would naturally be confusing to someone who is now learning the rules of regular spelling conventions. He has mastered the silent e's, the double consonants, and so forth. However, the words we helped him with included: echo, environment, source, silhouette, and numerous schwa sounds that simply have to be memorized.

We must add our favorite example of collaboration as the culmination of the intimate learning experience we have shared with Stu. The director has been working on a poem which Stu likes, and he plans to illustrate it. It was a good experience to see him become the "guide" again, pointing out the strengths and weaknesses in someon's attempt at poetry with the confident eye of an artist. We will display this work proudly to encourage others who work together in our center to overcome problems that can be surmounted after all. We told Stu that if he could see a piece of his sculpture start to work, he would know something of the pride we feel when we assess his progress.

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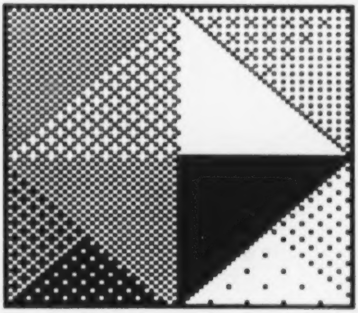
Multicultural Diversity and Learning Disabilities



A monograph on diversity as it relates to learning disabled students in postsecondary education. More than 250 individuals, personnel in various Special Programs for Disadvantaged Students nationwide, took part in these discussions as a part of a TRIO training grant. The discussions were directed by AHSSPPE in order to convey information to service providers that would assist in the retention of students with learning disabilities. Student populations discussed are Asians, Blacks, Hispanics, Native Americans, and Pacific Islanders.

22 pages. ppb. by Jane E. Jarrow
$9.50 for AHSSPPE members/ $17.00 for nonmembers
Send check or money order to AHSSPPE-MDLD, P.O. Box 21192, Columbus, OH 43221.

The Association on Handicapped Student Service Programs in Postsecondary Education is a national, nonprofit organization of persons from all 50 states, Canada, and other countries committed to promoting the full participation of individuals with disabilities in college life. Since AHSSPPE began in 1978, its membership has grown to over 1,100 individuals from more than 700 institutions. The Association has sponsored numerous workshops and conferences that have focused on common problems and solutions in upgrading the quality of services available for students with disabilities within postsecondary institutions.

GUIDELINES FOR AUTHORS

The *Journal of Postsecondary Education and Disability* welcomes manuscript submissions that are of an innovative nature and relevant to the theory and practice of providing postsecondary support services to students with disabilities. Shorter articles of 500 words or less that are of an opinionated nature, including reviews of professional literature, are also invited.

- Manuscript submissions should not exceed 20 typewritten pages. Feature articles submitted will be evaluated through blind review. An original and 4 copies should be furnished.
- Indicate whether or not your submission has been published or submitted elsewhere.
- Each manuscript should have a cover sheet that provides the names and affiliations of all authors and the address of the principal author.
- Authors should refrain from entering their names on pages of the manuscript.
- Manuscripts should be typed, double-spaced, with adequate margins.
- Do not send original artwork; it will be requested upon article acceptance.
- Refer to *The Publications Manual* (3rd ed.), American Psychological Association, 1983, for style guidelines.
- Authors should avoid the use of sexist language and the generic masculine pronoun.
- Authors will be notified by mail upon receipt of their manuscripts.

Manuscript submission by AHSSPPE members are especially welcome. The *Journal* reserves the right to edit all material for space and style. Authors will be notified of changes.